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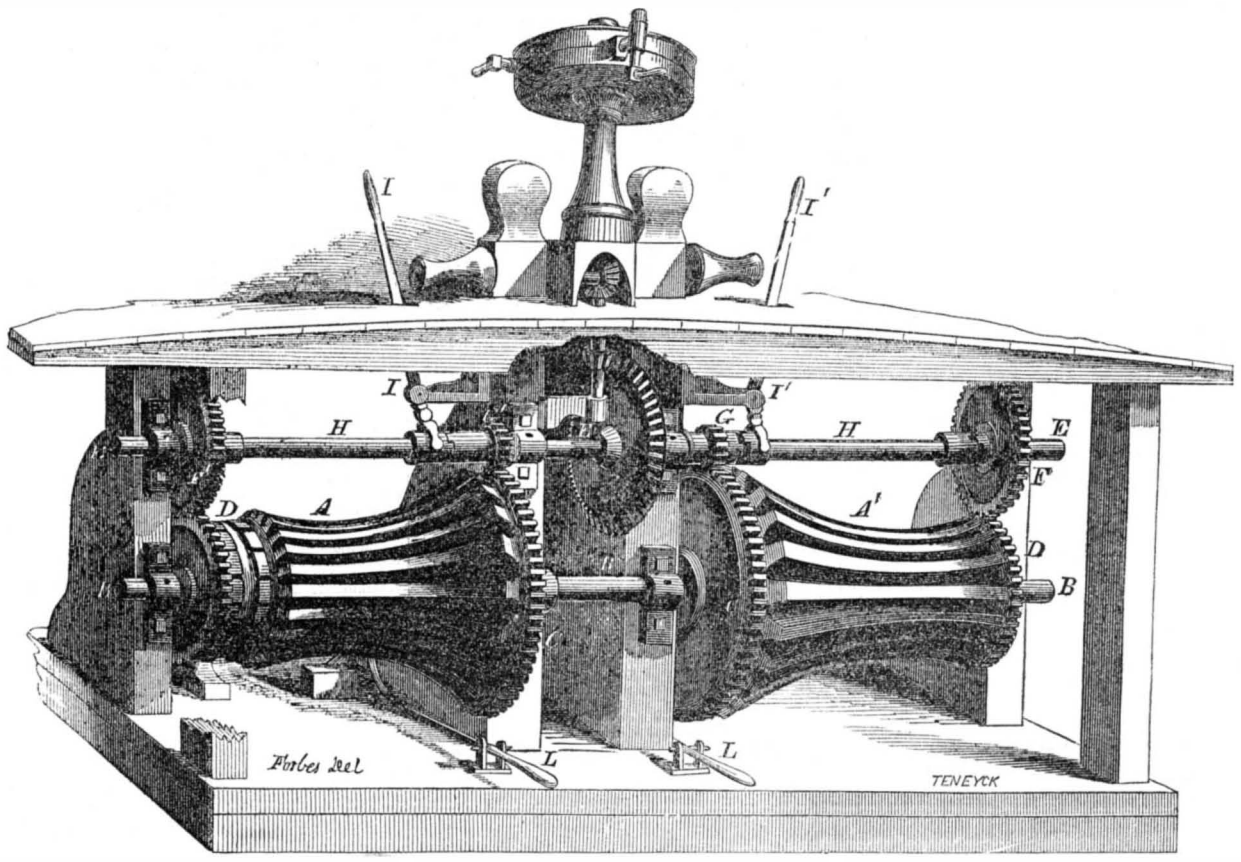
IMPROVEMENT IN CAPSTAN WINDLASSES FOR SHIPS.



New Capstan Windlass.

All ships are so arranged that two anchors can be dropped from the bows, one on each side of the bowsprit. The windlass for lifting the anchors extends across the front part of the vessel, so that both anchors can be wound up at once; and although it is comparatively seldom that both anchors are required to be used together, still the chains of both should be passed around the windlass, ready for emergency. To shift the heavy chains and permit the windlass to be operated with one chain only upon one anchor, and vice versa, is no easy job; it requires time and labor. In more than one instance have vessels been lost for want of some quick means of handling the chains and windlass.

In the improvement illustrated by our engraving the windlass barrel is divided into two parts, one for each anchor chain; these barrels are so arranged that they may be connected or disconnected so as to work in conjunction or separately, as circumstances require. The change from one to the other mode of operation is effected instantaneously by the mere throw of a clutch lever.

Beferring to the cut, A A′ are the windlass barrels mounted on strong iron shafts, B. The ends of the barrels are furnished respectively with cog wheels, C D, which gear with the pinions, F F′ G G′, on shaft E. H is a clutch sleeve, which slides on shaft E, and revolves with it having a feather inside. The wheels, F F′ G G′, are loose upon shaft E, being thrown in or out of operation according as sleeve clutch, H, is moved. Power is applied through the capstan above the windlass, which communicates with the latter by means of suitable gearing.

The sleeve clutches, H, are moved by means of the levers, I I′. As shown in the cut the windlass barrel, A, is in operation, in gear with shaft E, in consequence of the lever, I, being thrown outwardly, so as to bring sleeve clutch, H, in gear with pinion G′. The greatest power of the capstan is thus applied to the windlass, A, but the latter moves slow. If it were desired to increase the speed but diminish the power of A, it would only be necessary to throw lever I inward, so as to connect sleeve clutch, H, with cog wheel, F′.

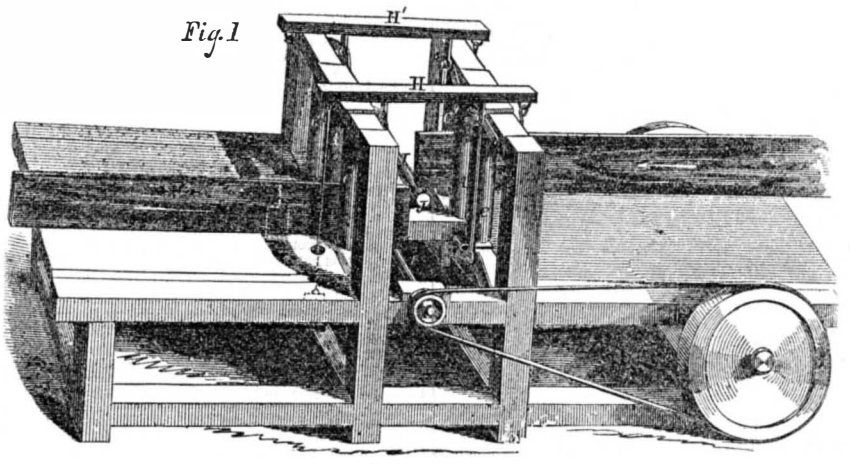
If the clutch lever is placed in an upright or intermediate position, as indicated by I′, so that sleeve clutch, H, makes no connection with either F or G, the windlass barrel will not move at all, the cog wheels upon shaft E being all loose, as before stated. Both barrels of the windlass, A A′ are thus perfectly controlled by the levers, I I′, and are capable of being used either separately or simultaneously, at the same speed, or at different speeds, as desired. One windlass may be disconnected and stopped at any moment while the other proceeds, and again put in motion; each is independent of the other, yet always ready for instantaneous combination, if required.

L L are spring pawls, which hold the purchase of the windlasses. The pawls are so arranged that, by hanging weights upon their ends they will serve as springs for the cables, and thus render the use of spring chain stoppers unnecessary. When the vessel is riding at anchor during a gale of wind the pawls may be so weighted as to slip, if any sudden strain is given the cables, permitting the windlass to turn and let out the chains. The pawls also act as brakes for the windlasses, so that by pressing the foot upon the levers, L L, the speed of the windlasses, when the chain is being run out, may be regulated at option. The peculiar arrangement of the parts is not shown in our engraving.

There is nothing complicated or weak about this improvement, neither is it expensive.—We are informed that its cost will be about the same as the best windlasses of the ordinary construction. Its advantages are self-evident, and require no further comment. We consider it a very valuable invention. Mr. John B. Holmes, of this city, is the inventor. Address J. R. Pratt, No. 62 Attorney st., New York, for further information. Patented Sept. 25th, 1855. Patents have also been secured in Europe through the Scientific American Patent Agency.

TONGUEING AND GROOVING MACHINE.

Fig. 1

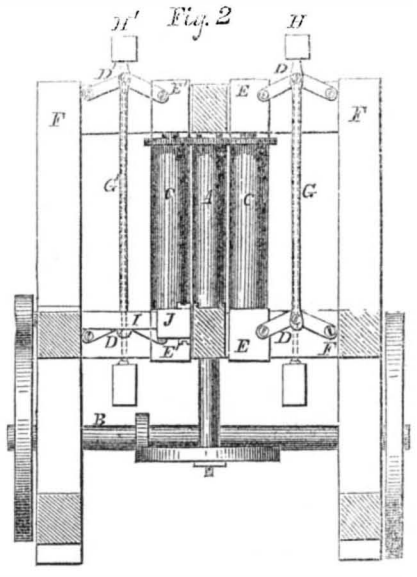


Tongueing and Grooving Machine.

In ordinary machines for tongueing and grooving, the boards require to be of equal widths throughout. If they are larger at one end than the other, they must be sawn down so as to be of even dimensions. This involves a waste of lumber, which, for many uses, is not required; also a loss of time and labor. The present improvement is intended to obviate these objections, the machine being so arranged that boards of all kinds and dimensions may be matched with the utmost rapidity and convenience.

Fig. 1 is a perspective and fig. 2 an end sectional elevation. A A′ are central upright rollers, put in motion by means of gearing from shaft B. C C′ are feed rollers, gearing at their tops with A, from which they receive motion. The boards are fed in between the rollers, and by them carried through the machine in alternate directions, as shown in fig. 1. The bearings of rollers, C C′ have a lateral movement, so as to accommodate themselv s to different thicknesses of boards. The toggle joints, D D′, are attached on one side to the bearing blocks, E E′, of the rollers, C C′, and on the other side to the frame of the machine, F. Each set of toggles is connected together by rods, G G′. Weighted cross bars, H H′, rest upon the peaks of the toggle joints, the tendency of the weights being always to spread the joints and press the rollers, C C′, up against the central rollers, A. If different thicknesses of boards are introduced, the rollers, C C′, will yield accordingly; therefore they are self-adjusting. I I′ are the cutter shafts, the ends of which are furnished with small cutter heads, J J′, one for tongueing and the other for grooving. When the board has been grooved on one edge, it is turned over, the other edge down, and passed through on the other side of the machine, to be tongued. Thus there are two boards constantly passing through the machine, in different directions. The edges of the boards being laid upon the table of the machine, parallel with it, they will pass through in the same manner; so that it matters not whether the boards be longer at one end than the other; they will be worked with the same certainty as if they were of equal dimensions throughout. The cutter shafts are put in motion by bands and pulleys in the usual manner.

Fig. 2



The inventor tells us that this machine will do about three times as much work as most of the machines in use. It is certainly simple in its parts and easily operated. It is highly spoken of by those who have had it in use.

Address Mr. Hiram C. Wight, the inventor, 93 Summer street, Worcester, Mass., for further information. Patented Jan. 1st, 1856.

An amendment has been proposed to our Patent Laws in the Senate, to allow persons in Canada to take our U. S. patents on the same conditions as our own citizens.

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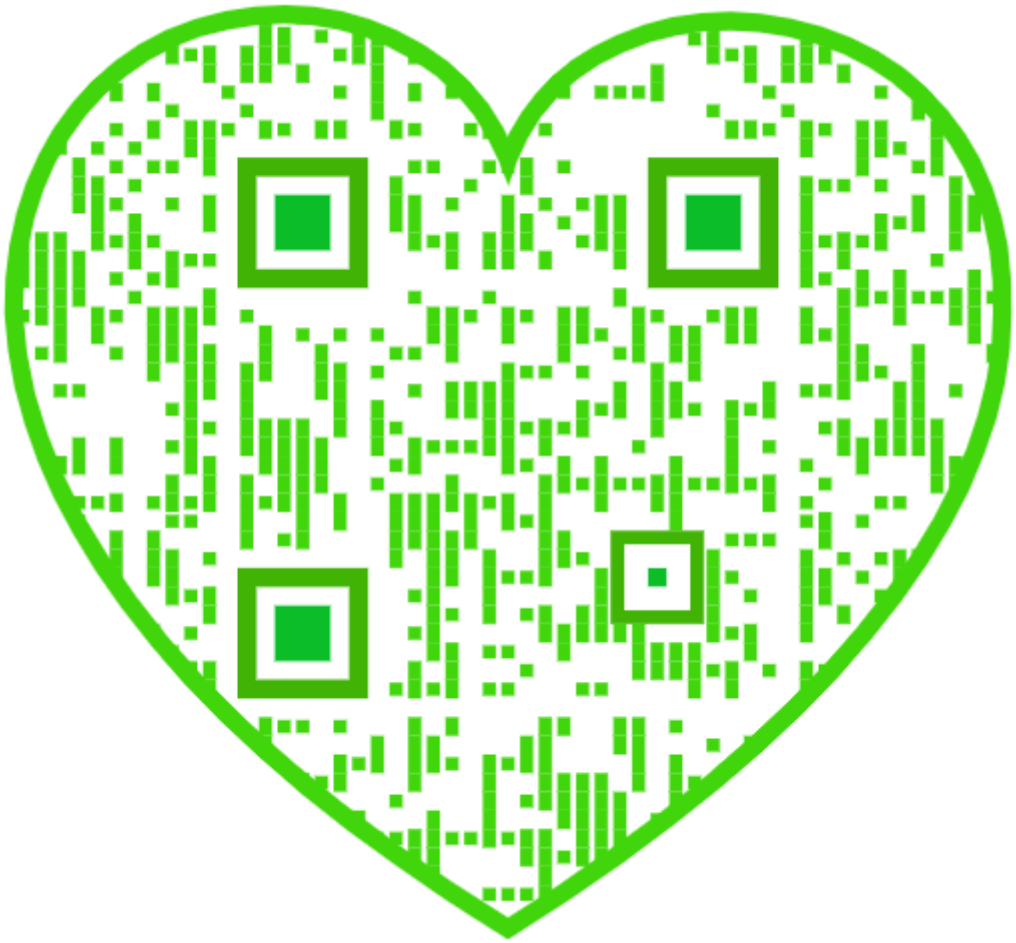

[Reported Officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING APRIL 15, 1856.

LOCK HASP—M. Newman, 2d, of Oak Hill, N. Y.: I claim the use of the swing bar, C, constructed as described, in connection with the locking bolt, e, and the hasp, A, with projections, f f f, thereon, for the purpose of retaining the hasp when on the staple, substantially in the manner set forth.

FLOOR CLAMP—H. W. Oliver, of Whitneyville, Conn.: I claim the sliding jaw or head, C, and the hook, h, attached or fitted to the plate or bed, A, and operated by the lever, D, and rack, E, substantially as described for the purpose specified.

CHURNS—Wm. Newbrough, of Mohican, O.: I claim the combination of the oblique bulged rockers with the diagonal separator for producing a violent agitation of the cream, as set forth.

WHEEL HUB—Joseph Summers, of Raleigh Court House, Va.: I claim my improved wheel hub, composed of the pipe box, b, and its radially grooved central flanch, c, combined with the half hubs and their radially grooved flanches and with the embracing band, g, substantially as set forth.

OIL GROUND TO RECEIVE PHOTOGRAPHIC IMPRESSIONS—Joel H. Tatum, of Baltimore, Md.: I claim the mode of preparing and rendering oil-prepared surfaces impressible or sensitive to the photographic art by the temporary destruction or chemical change of the oil on the immediate surface by the use of the spirits of wine and alkaline solution, and then the fixing the impression by the use of hyper sulph. soda and diluted acid, by which last application the alkalies are neutralized and the oil restored with the impression permanent upon the surface.

Disclaiming everything heretofore known or practiced in the production of photogrrphic pictures on paper or any un-oiled surface.

POWER LOOMS—Andrew Allen, of Wilmington, Del. I claim the combination of the fork, c c', on the lifting lever, D, the stationary hand, E, and the sliding pin, h, or its equivalent, the whole operating substantially as described.

CALENDER CLOCKS—Edwin Allen, of Glastenbury, Conn.: I do not claim the lever, n, and its stop pin, 23, nor any other parts described in the patent of John Williams.

But I claim the lever, a, with its pin, 4, attached to the wheel, b, and the eccentric, A, applied to the lever, n, in combination with a spring, d, substantially as described, for the purpose of controlling the operations of the said lever in connection with the pins, 19 20 21, in all positions of the clock movement.

CATTLE RAISING WATER FOR THEMSELVES—J. A. Ayres, of Hartford, Conn.: I claim the combination of the bucket, G, with faucet, H, attached, platform, T, and wheel and axle, C a', the above parts being connected by the ropes or chains, b c, and arranged substantially as described for the purpose specified.

SECURING AND RELEASING BLOCKS OF LASTS—Andrew J. Barnhart, of Hartfield, N. Y.: I do not claim attaching the block, B, to the last, A, by means of a spring catch, irrespective of the arrangement of the catch as shown.

But I claim the fastening or catch arranged substantially as shown, so that the insertion of the lever or last hook will disengage it and allow the block to be freely removed.

COAL STOVES—Wm. W. Binney, of Senaca Falls, N. Y.: I claim the partition, E, placed within the cylinder, C, and provided with a damper, H, the vertical tube or pipe, K, also within the cylinder, C, and the hollow base, A, provided with a register, B, when the above parts are arranged as shown and described for the purpose specified.

OPERATING CUT-OFF VALVES—Henry E. Canfield, of New York City: I claim the spring cramps, G G, as arranged in relation to the sliding bar, D, of the governor for the purpose and substantially in the manner shown and described.

GRATES AND DAMPERS FOR CHIMNEYS—Jacob Cohen, of New York City: I am aware that dampers are in common use in smoke stacks to furnaces, steam boilers, and stoves suspended centrally so that they may entirely cut off the escape passage, or limit that passage equally on both sides of the damper, and I do not therefore claim the centrally suspended damper.

I am also aware that dampers are in common use in chimneys where grates for burning anthracite and other coals are used, such dampers being limited however to the closing of one portion of the escape passage or diminishing only the half of that passage, and I do not therefore claim arranging dampers in chimneys where grates are used.

But I claim the arrangement of the centrally suspended damper in relation to the grate and the surfaces of the escape passage into the chimney, as set set forth.

STUMP EXTRACTOR—J. B. Creighton, of Tiffin, Ohio: I do not claim the use of balls running in grooves for the purpose of destroying friction.

But I claim, first, the combination and arrangement of the vertical screw, the nut, and the rollers with the bearing plate and frame, substantially as described and for the purposes specified.

Second, I do not claim the use of the wheels or levers or any of the parts separately.

But I claim the lever, H, carrying a wheel in combination with the frame, so as to expediate and facilitate the transportation of the machine, the whole being constructed and arranged as described.

OMNIBUS REGISTERS—Levi Cromwell, of Baltimore, Md.: I claim the use of the bar, 10, for the double purpose of a stop by which the operating pawl shall at the end of its thrust be confined within the circle of the ratchet teeth of the wheel and thus lock it, and of a medium by which to apply a strong force through the sliding lever or drop leaf, 6, or its equivalent to the spring of the pawl, substantially as set forth.

VAULT COVERS—Wm. D. Titus, of Brooklyn, N. Y.: I claim the combination of the pivoted cross bar, attached to the under side of the top of the vault, and the spring catches, f f, fitted to the stem projecting from the under side of the cover, Æ, substantially as and for the purpose set forth.

I also claim the employment of the hinged forked drop lever, arranged and operated substantially as described, for the purpose of releasing the spring catches, as set forth.

[The above patent is illustrated and described in another part of this paper.]

ELECTRO-MAGNETIC ENGINES—Maurice Vergnes, of New York City: I claim the concurrent action of two or more electro-magnets parallel and with contrary adjacent poles revolving upon an axle common to both within a double multiplying coil, arranged and running between and on the outside of the magnets in opposite directions and acting upon both sides or faces of the magnets as described.

WIGS—Dewitt C. Warner, of Wilkesbarre, Pa.: I do not confine myself to any particular method of inserting the hair in the gutta percha.

But I claim attaching the hair to a ground work of gutta percha, by means of the adhesive property of gutta percha, as developed by the application of heat, substantially as described.

RAILROAD BRAKE—Benjamin T. Trimmer, of Parma, N. Y.: I claim, first, the combination of the secondary brake rods, R' R', with the tumblers, T T, said tumblers being firmly attached and supported by it.

Second, the combination of the hand wheel and secondary brake rods, said combination performing the double function of braking the wheels of the car to which it is attached, and raising the tumblers to operate the other brakes.

Third, the combination of the rock shaft with the extensible and elastic chain by which the forward motion of the engine relaxes the brakes without danger of breaking said chain.

STONE AND MARBLE SAW—H. C. White and E. A. Gray, of East Poultney, Vt.: We are aware that notched dies and rollers, with chilled projections, have been used for cutting and dressing stone by rolling them over the same with pressure; but these are not saws in the true sense of the term, and do not act in the same manner,—therefore we do not claim such.

But we claim cast-iron saws, with chilled teeth, for the purpose of sawing stone.

TEACHING PHRENOLOGY—G. P. Wilcox and Wm. Butler, of Little Falls, N. Y.: We claim the combination of the tubes, A, wires, B, organs, C, or their equivalent, when provided with a rubber covering, or its equivalent, for the purposes and in the manner described.

DOOR SPRING—G. L. Bailey, of Portland, Me.: I do not claim a coiled spring in connection with a crank, for these are well known devices.

Neither do I claim having the spring act most powerfully when the door is closed.

I am also aware that a toggle joint has been used heretofore for various purposes, and I do not claim this in itself.

But I claim the spring, E, crank arm, H, and rod, D, constructed and operating in connection, as described, so that the crank arm turns inward whilst opening the door.

GRAIN WEIGHING—W. H. Bramble, of Cincinnati, O.: Ante-dated April 8, 1855: I claim, first, the double chambered oscillating vessel, C, when combined with and forming a part of an automatic weighing apparatus, constructed and operating substantially in the manner set forth.

I also claim dividing the vessel, C, into two compartments by means of a longitudinal, flexible partition, when the said vessel is arranged with and forms a part of a weighing apparatus, constructed and operating substantially as set forth.

I also claim combining gates of different sizes with the conducting chute and with apparatus that can be operated with the vibration of the scale beam, substantially in the manner and for the purpose set forth.

I also claim the combination of the double gates with each other and with the ratchet wheels, the retaining click and the detaching movements, substantially in the manner and for the purpose set forth.

I also claim detaching the click which holds the gate or gates in an open position, through the medium of a vertical tilting lever combined with the scale beam and operating in the manner substantially as set forth.

I also claim the arrangement of the auxiliary weighing poise, y, and the movable table, f, when the said table is combined with and operated by the gate, m, substantially in the manner and for the purposes set forth

SAWING MARBLE—Lebbeus Brooks, of Great Falls, N H.: I do not claim separate saws or gangs of saws running in the same plane at any desired angle, and furnished with mechanism and guides to regulate their vertical and longitudinal movements.

But I claim the peculiar combination of mechanism described, by which each of the saw frames is moved relatively to the other, and so as to dispose its saws either in or out of parallelism with those of the other, as circumstances may require, the same consisting of the upright rod, l, the bell crank rod, l', their slides, k k, and staple guides, h h, the same being applied to the mainframe and saw frame, as specified.

I also claim combining with each of the bell crank shafts, l', and the rod, l, and each of the saw frames, and its suspension rod, the movable frame, D or E, whereby said suspension rods are adjustable or moved at their upper ends simultaneously with the movements of their lower ends, and in the same directions.

FARM GATES—J. F. Downing, of Erie, Pa.: I claim the part of the hinge, E E', and the application of the lever as a means of elevating and lowering the gate, including the manner of obtaining the fulcrum or point of purchase, by attaching a rod to any convenient point on the large post, C.

The utility of constructing a gate according to the plan which I have described, is to avoid the difficulty of snow drifts and other obstructions, which frequently render other kinds of gates inoperative or inconvenient, by raising the gate by means of the lever, it will swing over snow, ice, and other obstructions, making it especially convenient to farmers.

AIR ENGINES—John Ericsson, of New York City: What I claim in the engine for producing motive power with heated air, is by means of a piston working within a cylinder under a mode of operation substantially such as described, performing the successive combined operations of simultaneously discharging the heated air, and taking in the charge of cold air, compressing and transferring it to a regenerator and heater, or either, and thence to the opposite end of the cylinder, to act upon and impel the piston, as described.

MOSQUITO NET FRAMES—Saml. C. Hartwell, of New York City: I claim the arrangement for securing the ribs rigidly in position when expanded; that is to say, the radial grooves on the knob, in combination with the grooved clamp constructed and operated as described.

STRAINING MARBLE SAWS—Wm. B. Hatch, of Elmira, N. Y.: I claim the rectangular saw frame, constructed with center bars and tension braces for straining the saws, in the manner and for the purpose set forth.

INDIA RUBBER—Nathaniel Hayward, of Colchester' Conn.: I claim the improved process described, of cementing and uniting one piece of vulcanized rubber with another piece of rubber, either vulcanized or in a state capable of being vulcanized.

SAWING MARBLE—J. E. Haviland, of Galveston, Texas: I claim adjusting the saw frame, F, more or less angularly or obliquely with the saw frame, D, by means of the adjustable or sliding plates, M N, which are fitted over curved surfaces on the pieces of the frame, substantially as described, for the purpose specified.

STRETCHING CLOTH—J. J. Hilliard, of Fall River, Mass.: I am aware that the revolving spreader formed of serrated bars arranged parallel to the axis or encircling the same and formed, each line of bars in two lengths or parts, having longitudinal play in opposite directions parallel to the axis, is, in itself, no new device; such therefore, I do not claim; nor yet operating the stretching bars, as specified, by wheels set obliquely on the shaft or axis of the separater, as this has before been done.

But I claim on the revolving reciprocating spreader described, the serrated stretching bar, B B' B' B', with the obliquely set wheels, E, on or round the axis of the spreader by means of the loose radial spoke, D D, and transverse pivots, a a, for connecting the stretching bars with the obliquely set revolving wheels, and whereby increased freedom in the longitudinal play of the bars is obtained, and the cloth thereby more easily and effectually stretched without injury and without the interposition of lubricating material, where such would be apt so soil the cloth, as set forth.

BEDSTEAD FASTENINGS—Wm. Hinman, of Elkhart, Ind.: I claim giving an upward inclination to the upper surfaces of the tenons on the side boards, a, and on the head and foot boards, g, and a corresponding shape to the mortises in the sections, d d, of the posts that receive said tenons, by which the action of the screw connections between the upper and lower sections of the posts, are enabled to form a close jointed and perfect union between the rails, b c, the head and foot, g, and the sectional posts, d f, substantially as set forth.

GRAIN AND GRASS HARVESTERS—Wm. H. Hovey, of Springfield, Mass.: I claim providing the front ends of the cutter and sickle bars with lips or projections, m k, arranged as shown, the lip or projection, k, bearing upon ledges, l, on the fingers, substantially as shown and described for the purpose specified.

CANDLE CUTTING APPARATUS—John Jones, of Brooklyn, N. Y.: I claim, first, the concave guiding surface, G, as a means of gauging the candle's length taken at its axis, as set forth.

Second, the combination of the sliding box, B, with the cutter, D, operating as described, for the purpose of cutting candles of equal length, taken at their axis, as specified.

ATTACHING THILLS AND POLES TO VEHICLES—A. J. Gibson, of Clinton, Mass.: I claim the manner of attaching thills to vehicles by means of iron hinges independent of each other, without a cross bar, for the purpose and in the manner and form substantially as set forth.

PROTECTING VINES—A. H. Grennel, of Springfield, Vt.; I claim so constructing the lattice frames, A A, B B, C C, and D D, that they may be swung with the vines upon them into a compact form, and be protected by closing around them the double doors, G and H, to protect the vines from the weather, as set forth.

HAY AND COTTON PRESSES—Simon Ingersoll, of Green Point, N. Y.: I claim operating the follower, C, by means of the levers, H H, attached to swinging frames, G G, and connected with the clamps, I I, or its equivalent, for lifting the follower bars, F F, the retaining clamps, P, or their equivalents, being employed for sustaining or holding the follower when the bars, F, are released from the clamps, I, substantially as shown and described.

[An engraving of this press may be seen in No. 30, present Vol., SCI. AM.]

R. R. CAR SAFETY PLATFORM—Jas. Kline, Jr., and S. V. Kline, of Chicago, Ill.: We claim the peculiar construction of a connecting safety platform between railroad cars, operating substantially as described and shown.

HOISTING DRUMS—G. W. La Baw, of Jersey City, N. J.: I claim constructing the coilers hollow and with a slot in them for the passage of the rope, together with the spring, l, or equivalent, as specified, for the purpose of holding and protecting the surplus rope.

FIRE ARMS—Palmer Lancaster, of Burr Oak, Mich.. I claim the operation of the transversely sliding many chambered breech, by means of the notches, e e, in the breech, and the swinging inclined tooth, h, applied to the trigger and acting, substantially as set forth.

METALLIC BEDSTEADS—Marshall Lefferts, of New York City: I do not claim the angle now in itself; neither do I claim Ω-shaped or corrugated metallic bars, as both these forms of metal are well known; but I am not aware that the bottom of a bedstead has ever before been formed of a combination of these metallic bars, together with the tie rods, as set forth, thereby the bedstead bottom is made in the most convenient and durable form combining strength and lightness, because the angle iron receiving the ends of the Ω-formed cross bars, makes a neat and durable attachment, by simply uniting the flat part of the Ω forms to the horizontal part of the angle iron; these two forms thus being better adapted to each other, for this purpose, than any other character of corrugated metal, and the tie straps, connecting the cross bars, at the same time sustain the mattress and prevent she said cross bars from twisting, as specified.

But I claim the combination of the angle iron side rails, a, with the corrugated or Ω formed cross bars, b, and straps, c and d, in the manner and for the purposes specified.

WHIP SOCKETS—W. H. Lyman, of Newark, N. J.: I claim the application of a piece of sheet india rubber to the common whip stock, so as to secure the whip to its place and to prevent dirt, moisture, and other injurious substances from entering the socket and causing damage to the whip, in the manner set forth.

STEREOSCOPE CASE—Wm. Loyd, of Philadelphia, Pa. I do not claim the use or construction of stereoscope lenses, es, which were known and used before my improvements

I claim the construction of a grooved box in combination with stereoscope lenses, to hold a number of picture, and the adjustment of the focus by means of placing the picture in one of the grooves, more or less distant from the lenses, according to the eyesight of the spectator, substantially as described.

HOISTING COAL—George Martz, of Pottsville, Pa.: I claim supporting the hoisting carriage upon outer and inner sets of wheels arranged in such a manner in relation with the double sets of railway tracks, and the discharging shute, that the coal car in said hoisting carriage is made to self discharge its load of coal into said shute, substantially as set forth.

I also claim so proportioning and arranging the respective parts of the hoisting carriage, and the coal car, that as soon as the elevating power is detached from said carriage, it will, by the force of gravity, run back to the bottom of the slope track, and re-station itself in she proper posiiion for discharging its empty coal car, substantially as setforht.

CATCH FOR BACKS OF SETTEES—B. F. McCreary, of New York City; I claim the turning catch plate, C E E, made to tilt either way, by a weighted arm, D, having two catches so applied as to form a catch for the back on one side only of the seat, in one of the tilted positions of the catch plate; and on the other side only of the seat in the other tilted position of the catch plate, substantially in the manner and for the purpose set forth.

REAPING RICE—W. J. McIntosh, of Savannah, Ga.: I claim the cutters, D F, in combination with the wire, G, and the cradle and slider, G' I, or their equivalents for the purposes set forth.

FEEDING FURNACES WITH FUEL—A. McD. Sprague, of Mobile, Ala.: I claim the furnace feeding apparatus composed of a cylinder, C, er box of other form sliding through an opening in the furnace front, having its inner end closed, and an openiug, a, in the bottom, being fitted with a door, C, at its outer end, and with a piston, D, and a slidtng shutter, b, all arranged and operating substantially as described.

DOOR SPRING—G. W. Griswold, of Carbondale, Pa.: I claim the arm, F, with its attachment to the door and frame, when said arm serves the purpose of spring and lever for closing, holding, and opening the door, substantially as described.

DIAPHRAGM WATER METER—R. L. Hawes. of Worcester, Mass.: I claim the elastic diaphragm, D, so constructed and arranged as to operate without attachments to the moving parts, and without being subjected to strain, as set forth.

ELECTRIC TELEGRAPH—Chas. Kirchhof, of New York City: I do not claim any part or arrangement with the use and result thereof, as far as already well known and clearly specified.

But I claim, first, the prevention of the too early intermission or restoration of the circuit in the use of self-intermission, through the method by which a key shuttle or its equivalent, is not only stationary during the whole travel of the armature, but also for a certain time afterwards, so that the circuit during that time remains either permanently broken or closed, but afterwards this shuttle is started and shoved by the indirect influence of the motion of the armature, through some devices, till to the moment of breaking or restoring the circuit, and here stopped, and the armature, and by that all oscillating mechanical parts are obliged to reverse immediately, substantially as described.

Second, the manner of stopping the index of all instruments of a circuit, right opposite the desired letter, without disturbing or preventing the index, armature, or shuttle of any instrument to complete their adopted motion, by means of a watcher and waker operated by the revolving hook v, and key lever, V, or its equivalents, in the manner specified, so that the watcher will keep open, meanwhile the shuttle makes contact, whereby the indicesstop, until the key is relieved and the watcher closes again.

Third, the method, substantially as specified, to keep all instruments of a circuit in unison working, and without any mechanical means, throurh employment of the induction current, by retarding the influence of the electro magnetic power at a certain degree upon that instrument which intermits the circuit, not having their intermitters in actively, are governed by it, and insured to complete their motion before the circuit of the prime current is intermitted or restored again. The said induction current, in each instrument, being used in connection with some suitable means for connecting and disconnecting she self-intermitter with the armature lever and also with a means of closing and opening the induction circuit, and for the opening and closing of the accommodation course of the prime current, which act together at once answering simultaneously their different purposes, as described.

MAKING BRASS KETTLES—O. W. Minard, of Waterbury, Conn.: I claim the employment of the clamps or holder in combination with the working rollers for drawing or working, or their equivalents, all arranged adjusted and operating substantially in the manner described for the purpose of forming a disk of metal into a kettle as specified without employing a mold or former therefor.

I also claim the combination of the center piece, D', for holding the disk of metal and disk, j, by which the bottom of the article being manufactured is formed by the combined action of the disk, j, and drawing or working apparatus as set forth.

HARVESTER RAKING ATTACHMENTS—Wm. H. Hovey, of Springfield, Mass.: I am aware that a reciprocating rake, D', working through a slotted platform, has been previously used, and I therefore do not claim said rake separately.

But I claim the swinging rake, I, in combination with the reciprocating rake, D', when said rakes are used in combination with the device for operating the rake, I, formed as shown, viz., of the catch, M, lever, L, with pin, p, attached, arms, K O', and the catch bar, H, attached to the rake, D', whereby the proper movements are given at the desired time to the rake, I, as described for the purpose specified.

Second, I claim operating the reciprocating rake, D', by means of the chains, M N, attached to said rake as shown, and passing around pulleys, t u u, and attached to the pulleys, o o, which pulleys are turned or operated alternately by the wheel, P, having teeth, w y, upon its outer and inner peripheries, substantially as described.

GRAIN AND GRASS HARVESTERS—Wm. A. Kirby, of Buffalo, N. Y.: I am aware that an angle iron as a bar for the support of the fingers is not new.

But I claim the manner of attaching the fingers as constructed with semi-circular recesses, x x, whereby they are secured to the angle iron finger bar by bolts without reducing the strength of bar, d, of the finger, while the bolts themselves serving the double purpose of securing the fingers and as guides to the cutter bar, substantially as set forth.

I also claim the use of the rivets, g g, when projecting above and below the cutters and used with the interspace, f, and recesses, s s, of the fingers, as set forth.

REPAIRING R. R. BARS—James McLellan, of Detroit' Mich.; I claim placing the rail or bar, H, to be heated within a cooler, D, which is fitted within the furnace, A, and supplied with water from a reservoir, E, at the outer side of the furnace, the cooler being so formed or arranged as to encompass or be in contact with the parts of the rail or bar not designed to be heated, substantially as described for the purpose specified.

FOLDING PAPER—John North, of Middletown, Conn. First. I claim folding paper by means of stationary straight edge or knife and folding nippers, substantially as set forth.

Second, I claim the manner of relieving the sheet from the nipper as set forth.

Third, I claim the adjustable check and the mode of releasi g i s hold by the advance of the nippers as set forth.

Fourth, I claim the rotating trip dog for raising and depressing the fingers, as set forth.

Fifth, I claim attaching the knives to the reciprocating carriage, as set forth.

Sixth, I claim operating the reciprocating carriage by means of the crank, h, the slotted connecting rod, M, the lever, N, and the link, P, whereby I attain accuracy and ease of movement.

Seventh, I claim the cutting rollers hung on a bar vibrated and checked as set forth.

Eighth, I claim the arrangement of the T levers with the double concentric rock shafts for operating the nippers by one cam as set forth.

LEATHER STRAPS—George W. Pruyne, of Mexico, N. Y.: I am aware that grooved rolls for creasing leather have been used, these I do not claim.

But I claim in combination with the grooved rolls one of which is yielding, as set forth, the guides, b, through which the creased part of the strap is drawn substantially in the manner and for the purpose set forth, and so that said guides shall serve to direct the finished strap as it passes between the rolls.

CUT-OFFS FOR STEAM ENGINES—John S. Shapter, of New York City: I claim holding up the puppet steam valves of a steam engine by the fluid contained in a supporting chamber and adjusting the discharge of said fluid from said chamber for the purpose of dropping said steam valves and cutting off the supply of steam to the cylinder at different points as may be required, as set forth.

HEAD AND TAIL BLOCKS FOR SAW MILLS.—E. H. Stearns, of Cincinnati, O.: I claim the eccentrics, 15 15, one, two, four, more or less or their equivalents in combination with the setting arms, 11 11, and ratchet racks, 9 9, or their equivalents, for the purpose of moving and setting the log laterally to the saw substantially as set forth, the said eccentrics being worked substantially as specified and represented or by other equivalent means.

Secondly, I claim the combination of two or more pieces composing the sliding dogs passing through one or more openings on the same side of the saw so near each other that they may be driven in or out of the dogs by the same blows of the mill bar, the ends of these dogs being so beveled or chamfered as to cause them to bind and tight en themselves in the openings through which they pass which dogs may be made in separate parts or jointed partially to their heads but not so close or firm as to prevent the parts from binding in their openings when driven into the log as substantially set forth.

Thirdly, I claim the combination of the levers, 22 and 23, and recess, 25, made in the under part of the sliding head, 5, in the foot block and operated by the motion given to the sliding head, which combination forms an extra safety trip for stopping the saw carriage when the dogs come opposite the saw to prevent the saw from striking the dogs, all substantially as and for the purposes set forth or any other mechanical equivalents which are operated by the motion given to the sliding head, 5, as mentioned.

PUDDLE BALL SQUEEZER—Shubael Wilder, of New Castle, Pa.: I claim the employment of the circular flange, A, constructed in sections as described, the same being connected by beveled dovetail joints in the manner and for the purpose set forth.

WEIGHING SCALES—R. F. Wolcott, of Claremont, N H.: I do not claim the principle of operating a scale poise by means of a screw.

But I claim the arrangement of the compound weighing poise with the screw, d, and with the sides of the scale beam, in such a manner that the said poise may be either lifted from place to place upon the beam or be moved gradually thereupon by turning the said screw, d, substantially as set forth.

SEEDING MACHINES—Thos. A. Risher, (assignor to himself and J. K. Cooper,) of Lancaster, O.: I claim bars, A A', and plates, a a', in combination with the reciprocating slides, H, ane the double holed bottom, F, the whole being constructed in the manner and for the purpose described.

AWL HAFT—Benjamin James, (assignor to Roswell E. James,) of Worcester, Mass.: I do not claim making an awl haft with a chamber within it for the reception and holding of awls or other tools.

But I claim constructing an awl half of two levers crossing one another turning on a common fulcrum and provided not only with jaws like a pair of pincers but with a chamber, D, in one or both of the handle arms of said levers as described.

I also claim forming the rear end or part of the levers with an extension, S, and so as to lap over the end of the other lever and receive an entire hammer head, I, upon it as stated.

ADJUSTING CIRCULAR SAWS—James M. Kern, (assignor to Enoch P. Fitch and Isaac Scott,) of Morgantown, Va.: Saws have been so arranged that greater or less concavity may be given to them, and the saw has been cut from the eye to the rim so that it may be sprung into a dished form. I do not claim either of these things.

But I claim so arranging a circular saw with its followers upon a shaft as that said saw may be converted from a disk to a concave saw, or vice versa, without removing any of the parts from the shaft as set forth.

DESIGNS.

METALLIC PENS—Albert Granger, of New York City: I claim the device impressed on the pen, viz., a medallion bearing a likeness of Washington.

COOKING STOVE—Samuel H. Ransom, of Albany, N. Y.

GAS OVENS—Edward J. Delany, of Philadelphia, Pa

SUMMER FURNACES—Jacob Beesley, of Philadelphia, Pa.

Orris root ground up fine, with whiting, makes a beautiful aromatic tooth powder, and is perfectly safe to use. Cuttle fish bone, charcoal, and orris root ground up fine make a fine tooth powder also.

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[For the Scientific American.]

On Oil from Cotton Seed.

The records of the Patent Office show that a great amount of intellect is always engaged in the discovery and useful application of machinery to the various arts useful to man, and it is a matter of some surprise that so little has been directed in giving value to so very abundant a material as cotton seed. If it could be economically made into oil and properly purified, or into saponaceous matter, it would be of immense value. The material is a most abundant one; the present crop of cotton exceeds three and a half millions of bales, and promises not to be less so long as 9 cents per pound will pay the interest on the capital invested. A bale of 500 lbs. yields 40 bushels of seed, weighing 1000 lbs., and three bushels of seed gives one of kernels separated from its hulls, and each bushel of kernels two and a half gallons of oil. All these, after deducting one-fourth of the seed for planting, leaves the enormous quantity of 105 millions bushels, 35 millions of hulled seed, or 87 millions of gallons of oil. These figures are large, but the arithmetic is good.

The only attempt that I have seen to make oil was by a machine patented to Smith and Follin, of Petersburg, Va., about 35 or 40 years ago, and a very imperfect one. The seed was hulled or coarsely ground on the periphery of two stones revolving towards each other; the cracked seed or coarse meal was screened, and the hulls separated, and the kernels (which are but the leaf in embryo) thrown on a granite platform, having a circular groove, in which groove two stones passed round, that were attached through their eyes or centers to an upright shaft, made to turn slowly. There was attached to their shaft or king post, a sword or knife to direct the meal towards and into this groove, and another to scrape from the stones the meal that would gum on them. This pulp or mashed meal was then put in hair cloths and placed on each side of a gently tapering wedge, which was driven by the heavy weight and force of a pestle till all the oil was forced out. A common flax mill will give you some idea of the process. The shells or hulls are greater than their contents, and they may contain much oil, but the fiber that covers the outer surface, will require very hard squeezing to prevent its absorbing the oil, which is probably the great difficulty. This fiber may, in a measure, be removed by swinging off, by passing it over heated rollers, but this would be a tedious method. It would be very desirable that the oil could be forced from the seed without grinding.

The oil is of a beautiful pea-green color, inodorous, and if properly purified, might be good for all or some of the uses for the table, lights, lubrication, and paint, and the coarser part for soaps. A small portion of the cake with indian meal, makes good hoe cake, I know.

The value of the cotton seed, however, as a manure, will always prevent a very large quantity being used for making oil. A. P.

Mobile, Ala.

[Mr. E. Conkling, of Cincinnati, writes us that he has made soap direct from the rough cotton seed.

The best Time to Transplant Evergreens.

Messrs. Editors—I notice in the Scientific American of the 12th inst. you recommend the transplanting of cedar, spruce &c., in the early part of spring. I have had considerable experience in transplanting evergreens, and strange as it may seem, I am satisfied that about the 4th of July is the best time in the year. I have transplanted hundreds as late as the 1st of August, with perfect success, but it can be done any time in June or July. At any other season of the year I have found great difficulty in making them live. It is accounted for by the fact that the sap does not flow at the same season with deciduous trees and shrubs. A mistake in transplanting is the giving of them too much water. Give the earth a good soaking at the time, but do not water them again, unless it should be very dry, for 10 or 12 days, then give them another good drenching. This method was recommended to me by the Hon. Samuel Walker, of Roxbury, formerly President of our Horticultural Society, a gentleman who combines more scientific and practical knowledge in regard to trees, plants, fruit, and flowers than any man in New England, which any one will discover by visiting his gardens and nurseries in Roxbury and Dorchester. M. F. F.

Boston, Mass.

(For the Scientific American.)

Coarse Wheat Meal for Bread.

During the past winter I tried a number of experiments in making bread with hulled wheat coarsely ground. Wheat ground so that one-third or two-thirds of it passed through a cloth with meshes of 27 to the inch, made good sweet bread. A small circle of friends who partook of it said they would like to have some of it every day on account of its excellent flavor and its healthful nature. There is no necessity for grinding hulled wheat so fine as is now done in making flour, any more than there is to grind quick-lime for mortar. The way to make bread from the wheat meal is to separate the finer portions from the coarser through a bolt cloth of the mesh named, then steep the coarse part in water at from 130° to 200°. When this coarse meal all becomes soft, the finer kind and yeast are added, and made into a dough, and put into cast-iron pans to rise; these are afterwards baked in the usual manner.

My experiments were performed in making bread for the family, and I baked in a stove oven. In some experiments I mixed the salt with the yeast instead of with the meal and water first, but the bread did not *rise* well. This may explain the cause of heavy bread being sometimes produced from the same flour and yeast.

Although I believe that hulled wheat ground into coarse meal, makes sweeter and more healthy bread than fine flour, it will be very difficult to get most persons to believe this:—prejudice in old ways is a great barrier to useful improvements. I will cite a case of this kind that came under my own observation. A year ago last winter I sold some meal of hulled wheat to a neighbor, who, after taking it home, could not get his wife to try it; so he brought it back and explained the difficulty; I invited him to dinner, and served him with wheat meal bread, and a "minute pudding" made of the same meal. He liked them so well that he took some of the bread home, and his meal back again with him. But it was of no use; his wife ordered the children not to eat it, and they would not, and she declared it was unfit to eat; so he brought me back the meal again, and I paid him back his money. Such are some of the difficulties which many persons meet with, who endeavor to improve the condition of mankind.

Others of my neighbors, however, like it, and have been willing to exchange their best smoked ham for my brown bread.

The use of meal made from hulled wheat would save millions of dollars to our people every year, but the greatest gain would be an improvement in health by removing one great cause of constipation, so peculiar to those who use fine flour. I have made at the rate of 180 lbs. of good moist bread from 100 lbs. of hulled wheat meal. The wheat was raised in Kentucky, was white, and of good quality. Red winter wheat, however, makes the sweetest bread. The Mediterranean wheat hulls easy, makes good bread, is the most hardy, yields best, and is not so subject to the attacks of insects as other kinds. O. P. S.

Cause of Heat and Cold.

Messrs. Editors—The account given by C. E. Moore, on page 188, "that he has been up far above the clouds, and found the sun to be as hot as in the valleys," also that "snow-capped mountains are of conical shape, and reflect the rays of the sun from their sides," &c., &c.

Aerial voyagers are apt to imagine they rise much higher than they really do. The lightest gas used in filling balloons is sub-carburetted hydrogen, whose specific gravity is as five and a half to ten of the density of the atmosphere on the planes of the earth. A balloon, therefore, cannot rise to an atmosphere of seven pounds to the square inch, or less than half the density of that on the surface below. A balloon cannot rise as high as the specific gravity of the gas it is filled with would permit, the gravity being increased by the silk, ropes, car, and the voyager. I much doubt if any balloon ever rose two miles in perpendicular hight. The fact of his being up far above the clouds is no proof of any great elevation, for I have seen clouds far below me on a mountain of only five thousand feet, or less than a mile of perpendicular hight. The commencement of the perpetual snow line on the Himalaya mountains is far below the base of any cone rising from it. That the rays of the sun are reflected from mountains where perpetual snow exists is certain, but it is reflected without parting with its caloric. I can readily believe Mr. Moore, that he felt as warm above the clouds as he did in the valley below. I am rather surprised he did not feel much warmer. Surely, any person sitting in a car under a large conical balloon covered with silk, expanded to its utmost by the interior gas, the large end towards the sun, and its rays passing down to the small end, where they concentrate on the voyager, he must feel an unusual degree of warmth.

It is necessary, in reasoning on any subject, to take special care that our theory is based on some provable facts, or our reasoning will produce confusion.

It is a well-known fact that three properties of light are separated in passing through a prism. This is owing to their varied degrees of refrangibility. It is also well-known that the sun's rays commence refraction on entering our atmosphere, and that the refraction increases as the atmosphere accumulates in density. It is known that where the density of the atmosphere is about seven pounds to the square inch, everything is in a frozen state, but on, or near the surface of the earth, where the pressure is about fourteen, all the properties of light are liberated and disseminated. Can we doubt, then, that some given density of atmosphere is necessary to develope the action of solar light? Wm. Partridge.

Binghamton, N. Y.

[There can be no doubt but heat is the cause of action in bodies. Heat and cold can be produced in two metals by a current of electricity,—heat is caused by compression and cold by the expansion of bodies, and yet we read of the atmosphere being so dense in the cold Arctic regions that persons can converse with ease at the distance of a mile. It is difficult to account for these phenomena.

Manufacturing Glue.

Common glue is a most useful and important substance. It has been known and used from time immemorial for cementing pieces of wood together, and for many other purposes, and is still extensively used in every country. It is generally made from ears of oxen and calves, and the parings of the hides, skins, &c. The parings of ox and other thick hides make the strongest, and afford about 45 per cent. of glue. The tendons and other like parts of animals make glue, but it is not so strong as that made from hides. Animal skin in every form may be made into glue. The cuttings and parings of hides are first macerated in milk of lime in pits or vats, and the liquor is renewed two or three times in the course of two weeks. They are then taken out with the lime adhering to them, and washed in water in baskets, and are then placed on hurdles to dry. When exposed to the air whatever lime remains on them is converted into chalk by absorbing carbonic acid gas from the air. A small portion of chalk will not be injurious for the after processes, although quick lime would. The next process is the extraction of the gelatine or glue from the pieces of skins, &c., so treated. For this purpose they are placed in a large bag, or rather net, made of thick cord, and spread open within a large caldron. A light framing within the caldron prevents the bag from sticking to its sides. The water of the caldron is then gradually brought up to the boiling point, and as the prepared skins in the net gradually melt and mingle with the water, more are placed in the net, and they are frequently stirred up and pressed with poles. The condition of the caldron is tested occasionally by taking out some of the liquor and setting it aside to cool in a glass. When a clear mass of jelly is produced the boiling is judged to be sufficient the mouth of the net is then closed with its cord, and it is raised or hoisted above the caldron over a roller, and left to drain. The liquor of the caldron if not strong enough to make glue may be further concentrated by boiling. The contents of the net are boiled a second time, to make size, and when the solutions are too weak to make glue or size, they are economically used instead of fresh water. The gelatin liquid of the glue caldron are drawn off into a vessel called a "settling-back," which is surrounded with warm water, and the temperature is kept up for about five hours to maintain it in the liquid state until the solid impurities settle to the bottom. The clear liquor is then drawn off into wooden coolers, which are about six feet wide and two feet deep; here it becomes a firm jelly, which is cut out into square cakes with a spade; these are deposited in square cakes in a wooden box having slits in it, through which a brass wire attached to a bow is drawn to cut it into thin slices. These are placed on nets stretched in wooden frames and placed in long lattice sheds, when they are exposed to the air to dry. They are frequently turned and carefully watched until they are about two-thirds dry, when they are removed to a room, and they are left to dry still further, and then they are finally dried in a warm room. The drying of the glue is an operation which requires great care and attention.

Good glue should contain no specks, but be transparent and clear when held up to the light. The amber colored glue is the best kind for cabinet makers, not the black kind, as some suppose. The best glue swells without melting when immersed in cold water, and it renewes its former size on drying. The best method of softening and dissolving glue for use is first to immerse it in small pieces for about twelve hours in cold water, then set it over a fire and gradually raise its temperature until it is all dissolved.

Fine white glue is made from careful selections of white clean skin parings; and these may be bleached in a degree by immersing them in a weak milk of chloride of lime instead of simple lime. Size for stiffening straw and leghorn hats is made of clippings of parchment and fine white sheep skin dissolved in boiling water. White glue is employed in the stiffening or dressing used for silks and other fabrics which are re-dyed and re-dressed.

If glue which has been steeped in cold water until it has swelled be then immersed in linseed oil and heated, it dissolves, and forms a glue of great tenacity, which, when dry, resists damp. Glue is employed for making molds for castings in wax and plaster of Paris. Mixed with molasses it forms the ink rollers of the book printer.

The Fatigue and Fracture of Metal.

Many accidents, the causes of which had been pronounced mysterious may be ascribed to a progressive deteriorating action, termed the "fatigue" of metals.

Metal in a state of rest, although sustaining a heavy pressure, or strain, as in a beam, or girder, and exhibiting only the deflection due to the superposed weight, will continue to bear that pressure, without fracture, so long as its rest is not disturbed, and the same strain was not too frequently repeated, but if either of these cases occur, a certain disturbance of the particles take place, the metal is deteriorated, and that portion subject to the reiterated strain ultimately breaks down.

Artificial Propagation of Fish.

The Sandusky *Register* says that a most singular phenomenon may now be seen around the docks, in the water, in that city. Immense numbers of white fish last fall were cleaned on the docks, and the offal and spawn thrown into the Bay. This spawn *has hatched*, and now, around the docks may be seen millions of miniature white fish. Here is a fact in pisciculture, showing that from the refuse spawn, hatching can be induced.

The Fire Engine Boiler.

Messrs. Editors—In reply to Mr. Prosser's note in your last, in regard to the boiler employed on our Engine, we have simply to say, that the merit of *originating* it is *not* claimed for Mr. Lee; neither is it *conceded* to Mr. Prosser. Lee & Larned,

Proprietors of the Steam Fire Engine.

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New Inventions.

The Boston Steam Fire Engine.

On the 12th inst. a large fire occurred in Boston, and after it had destroyed a large amount of property the Mayor ordered the steam fire engine to be put in service, it having been laid up as useless lumber for a long time. It soon got to work and showed what it could do. Respecting its performances the *Transcript* says :—

"The admirable performance of the steam fire engine is the subject of high commendation in business circles. The machine saved property valued at many times its cost on the occasion, and those who have been so persistent in their opposition to give it a fair trial will hereafter be classed in history with the men who raised such a storm against the elder Quincy because he introduced suction hose into use."

Hereafter the engine is to be generally used at every fire in Boston.

Liquid for Coloring the Hair Black.

Alex. Reed, of Pittsburg, Pa., having seen it stated in the Scientific American, in answer to a correspondent, that we were not acquainted with any liquid that would color the hair black, and not stain the skin, gives the following as a receipt that will do it :—"Take one part of bay rum, three parts of olive oil, and one part of good brandy, by measure, and wash the hair with this mixture every morning. In a short time the use of it will make the hair a beautiful black without injuring it in the least."

We know that pure olive oil and good brandy in equal parts, make an excellent hair wash, but have never known it to color the hair. The above mixture *may* color the hair but we would not infer from its nature that it would. There can be no doubt, however, of it being a tonic of much superior character to many that is sold at an extravagant price. The articles must be mixed in a bottle and always shaken well before they are applied. It is not an easy matter to obtain either *pure* olive oil or French brandy, to prepare such a mixture, but we suppose that the above receipt refers to the common articles sold by druggists.

Silk from the Mulberry Tree.

The Paris correspondent of the London *Atlas* gives an account of a discovery said to have been recently made in France by Alphonse Karr, which is nothing less than the manufacture of silk from the mulberry tree. This tree furnishes the food of the silk worm, and this discovery is intended to take the entire business out of the hands of this creature. It is stated that the mulberry leaves are boiled first into a thick paste, from which the silk threads are made. The correspondent alluded to states that he has seen several yards of excellent silk, made in this manner, and that its price is twenty-five times cheaper than silk made in the common way. We are inclined to doubt the truth of the story; but we hope it may be true.

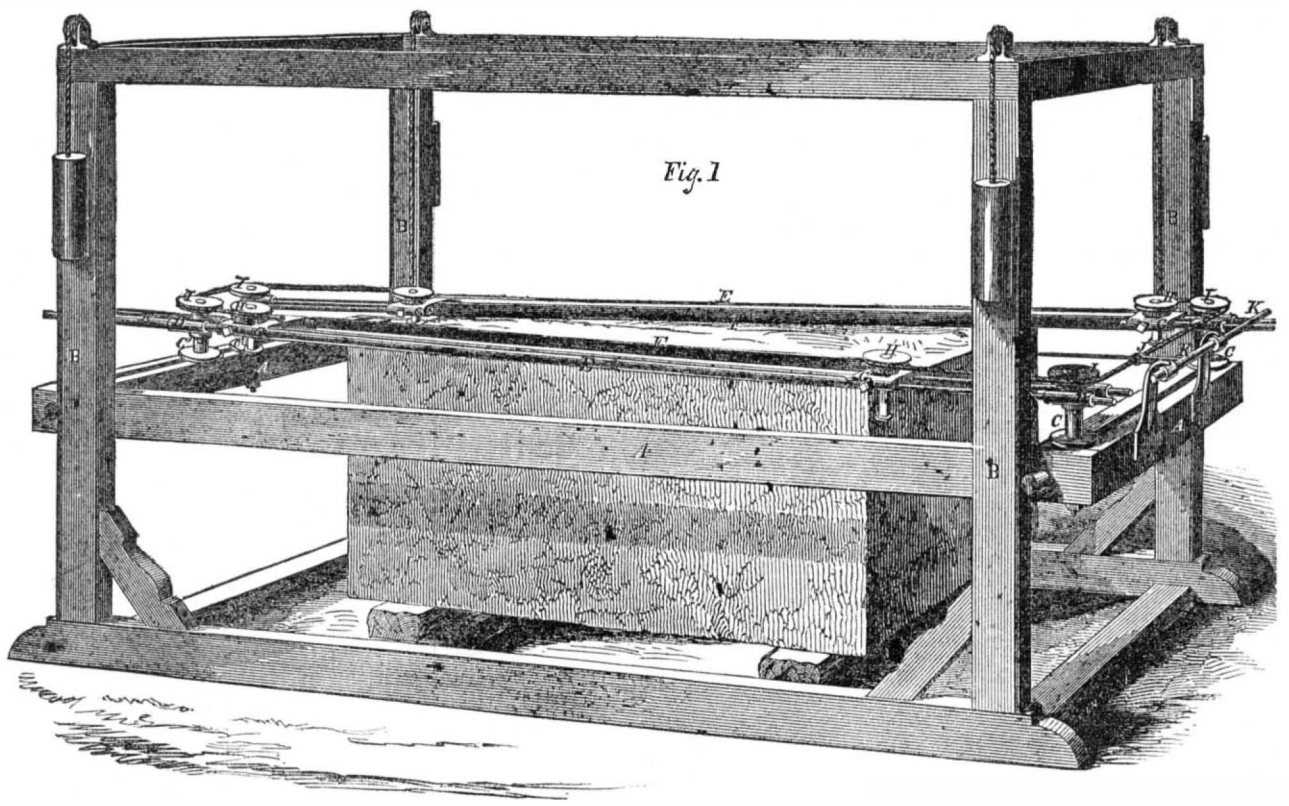
Marble Sawing Machine.

Our engraving illustrates the improved Marble Sawing apparatus, patented by Messrs. Schrag and Von Kammerhueber, of Washington, D. C., on the 19th Feb., 1856. The invention is designed for the sawing of two sides of a block of marble at once, both sides being cut parallel or at angles, as may be desired. The means of adjusting the saws and changing the cutting angle, are very simple.

A is a frame hung with weights, and moving vertically on the frame posts, B. Frame A is slotted at each end, and in the slots the standards, C C′, move, said standards carrying guide pieces, D D′, through which the ends of the saw frames, E, slide. It is by sliding the standards, C C′, nearer together or further apart, that the angle at which the saws cut, is changed. Beneath each standard is an adjustable nut. F are the saws strained between the head blocks, G G G′ (fig. 2.) These head blocks are furnished with ratchet pulleys, H, which are connected together by means of cords; in passing from one pulley to the other, the cords bend around the friction rollers, I. The cords are grasped in the center by the tongue piece, J, which is connected with the horizontally moving bar, K. The motive power is applied to one end of bar, K, which, by means of its connection with the cord, causes the saw frames with their saws to vibrate.

The pulleys, H, are furnished with ratchet wheel and pawl (fig. 2,) so as to wind up or

MACHINE FOR SAWING MONUMENTAL MARBLES.



sawing at acute angles, where the cuts of the saws cross each other.

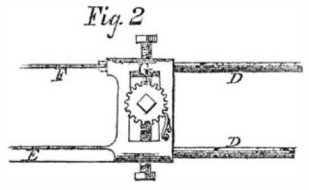
The inventors claim the following advantages for their improvement:

First, That all angles, from 0 to 180°, can be sawn.

Second, That by the arrangement of the straining apparatus, the motive power is transmitted to the saws without loss, and independent of the degree of the angle.

Third, That by the vertical adjustability of the pulleys and friction rollers, the saws can

Fig. 2

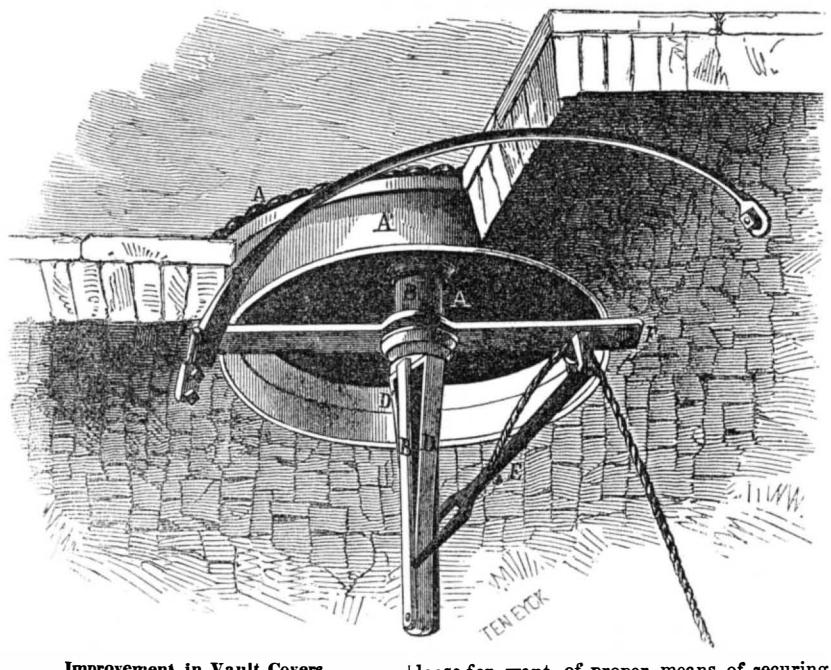


be brought into one plane if desired, or one of them elevated above the other, so as to cut acute angles.

Fourth, That the adjustment is easy and correct, no pressure in any part of the machine existing, either from the straining of the saws or the transmission of the motive power, so that no greater power is required to saw two tapering sides, than to saw two parallel sides of a block of marble.

Address the patentees for further information.

IMPROVED STREET VAULT COVER.



Improvement in Vault Covers.

In large cities like New York, every inch of the earth's surface is of great value for building purposes, and the owner of real estate, when he has occasion to put up a new house, generally tries to make the most of his land. The law allows him to build as high and as deep as he chooses; it is not uncommon to meet with buildings that are six stories above and three stories deep below ground. The law also allows the owner to excavate vaults under the street, in front of his property, to a distance of one-third the width of the street. These vaults are lighted by means of holes extending through their roofs to the surface of the pavement; the apertures are protected with covers, either wholly of metal, or of metal combined with thick glass. Almost every dwelling house has its vault in front for the reception of coal.

The vault covers in general very often get loose for want of proper means of securing them, and thus become dangerous traps to the pedestrian. Many a limb has been broken or other bodily injury sustained, by stepping upon these insecure covers. They are generally fastened by means of a chain within the vault; but if the chain is left a little too slack, the results we have just named are likely to ensue. This method is also inconvenient both in opening and closing the vault hole, whether temporarily or otherwise.

The object of the present improvement is to afford perfect security against accident, and also greater convenience. In our engraving A is the vault cover, and A′ the metallic ring fitted into the roof of the vault, on which the cover rests. B is a vertical spindle attached to the center of the cover, A, and projecting down through a cross bar, C, which is longer than the diameter of the hole. Spindle B is furnished with two springs, D D′, which fly out of slots in the spindle, when the latter descends, and by catching underneath the shoulder of cross bar, C, prevent the cover from rising. In order to remove the cover the springs, D D′, must be pressed into their respective slots in the spindle, B, so that the latter may be raised through the aperture in bar C. The springs are compressed by means of the forked lever, E, one end of which is hinged to bar C. A cord, passing over a friction roller, is attached to said lever; by pulling on the cord, the lever will rise, and its forked end will press in the springs, D D′, when the cover may be removed from above.

One end of bar C is pivoted at F; the other end rests on the guide G. When it is desired to open the vault and yet retain an elevated protection above the pavement, so as to prevent people from falling in, the cover, A, is raised until the bottom part of its spindle, B, rests on the cross bar, C; the latter is then swung around on its pivot, F, and the hole is open; but the cover remains elevated, at one side, so that no one could very well fall down the aperture, unless purposely.

To close and secure this cover it is only necessary to swing back the cross bar, C, and drop the cover and spindle, B, to its place; the springs, D D′, then fly out, and the security is complete. This cover is therefore self-fastening. The old method makes it necessary for some one to go into the vault, after the cover has been adjusted to fasten the chain.

This improvement, it will be obvious, contains several very useful features. It is a thing that has long been needed. Mr. Wm. D. Titus, of Brooklyn, N. Y., is the inventor. His patent has just been issued. It will be found in the official list for April 15, 1856, which we publish in another column. For further information address the inventor, box 3,847, New York City.

Artificial Wines.

Port wines are often manufactured from bad claret and bad red wine, by the addition of a substance consisting of extract of elderberry juice, Lisbon grapes, burnt sugar, brandy, bitter almonds, and logwood.

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Scientific American.

NEW-YORK, APRIL 26, 1856.

Valuable Experiments with Cast Metals.

A very finely executed and comprehensive work has just been published by authority of the Secretary of War, containing reports of officers belonging to the U. S. Ordinance Department, on the above named subject. The experiments were extended over a series of years, and were made to test the strength and other properties of metals employed in the manufacture of cannon. The work is a scientific one of great value, especially the information it contains relating to the nature and treatment of cast-iron, a material of deep interest to so many millions of people in our own and other countries.

The experiments were mostly conducted under the charge of Major W. Wade, who details them in an exceedingly clear and interesting manner. One new fact developed by them is, that iron fused a number of times up to a certain point, is thereby greatly improved in strength. In trials with some iron, it was found that its transverse strength was nearly doubled by being melted and cast four times. This is a discovery of great importance to all engineers and cast-iron founders. At the South Boston Foundry, experiments were made to test the strength of cast-iron which had been submitted to fusion during different periods of time. Eleven thousands pounds of iron were cast into four six-pounder guns; one after the metal had been under fusion or melted half an hour; the second, under fusion an hour and a half; the third, under fusion three hours, and the fourth, under fusion three hours and three quarters. The gun first cast burst at the thirty-first fire; the second, at the thirty-fourth; the third was fired thirty-eight times, and remained unbroken. Thus the strength of the metal seemed to increase in a ratio corresponding to the period of fusion, or under which it was kept in a highly molten state, and it might have been inferred from this that the fourth gun would have been the strongest of all. Instead of this being so, however, it proved to be the weakest, for it burst at the twenty-fifth discharge. In view of these experiments, Major Wade, in this report, says, "these results appear to establish satisfactorily the fact, that a prolonged exposure of liquid iron to an intense heat, does augment its cohesive power, and this power increases as the time of the exposure up to some (not well ascertained) limit, beyond which the strength of the iron is diminished. This is a new developed fact in relation to cast iron, subject to concussions, of deep import to all engineers. Experiments were also made to test the transverse strength of cast iron bars, two inches square and twenty-four inches long, the metal of which was kept under fusion during different periods of time. These bars were set on supports twenty inches apart, and the breaking force was applied at the middle. The results obtained from four castings were in favor of that which was kept fused longest—three hours. On this head the report says, "from this it appears that the cohesive power of the iron, so far as it can be shown by its capacity to resist transverse strains, is increased 60 per cent. by its continued exposure in fusion. This is also a fact of importance to engineers and architects, regarding girders and beams, subject to a *crushing* force.

In most of the books which treat of the strength of cast iron, the resistance which it opposes to certain strains, is given; but little useful information can be obtained in them regarding the very great difference of strength in different kinds of cast iron. But as the density between the lower and higher grades of this metal differs as 6·9 to 7·4—a difference of 31 pounds per cubic foot, and as the tenacity of the metal has a relationship to its density, it was found by these experiments that cast iron, having a density of 6·900, had only a tenacity of 9000; while that having a density of 7,400, had a tenacity of 45,970.

Castings of the greatest weight, according to their size, are by far the strongest, and weighing them is a ready means of judging comparatively of their strength.

Some important facts were also developed in relation to the cooling of heavy castings. At the Fort Pitt Iron Works, two eight inch and two ten inch guns were cast, one of each in the common way, solid, and one of each with a core on a tube of iron, through which water was made to circulate after casting, to cool it from the interior, according to an invention of Lieut. Rodman. The solid eight inch gun burst at the 73rd discharge; the hollow cast one stood 1500 discharges, and did not burst; the solid 10 inch cast gun stood only twenty fires, while the hollow ten inch gun stood 249. These guns were cast of the same material and at the same time; the difference in favor of the hollow cast guns, is astonishing. This is attributed to the method of cooling, it being supposed that in cooling, the solid guns contract entirely from the outside, and that a strain is exerted upon the arrangement of the particles of the metal, in the same direction as the strain of the discharges. Lieut. Rodman goes into a very subtle mathematical demonstration to show that this is the case, and that his method of cooling the casting obviates this unequal strain. But on the back of this, Major Wade presents a new fact in relation to *the effect of time*, after the castings are made, and before they are used, which is also of vast importance to engineers. Eight inch guns proved thirty days after being cast solid, stood but 72 charges; a gun of the same bore, proved 34 days after being cast, stood 84 charges, while one which was proved 100 days after being cast, stood 731 charges, and another, proved after being cast six years, stood 2,582 charges. What an important fact is thus newly developed, showing us that solid cast cannon should not be actively used until they have been kept for some years. Major Wade accounts for this phenomenon in cast iron, by supposing that the particles strained in the cooling re-adjust themselves in the course of time to their new position, and become free or nearly so, and he presents some good arguments in favor of this theory.

The lesson to be derived from this, by our engineers, is, that heavy castings of iron for beams and machinery, subject to strains, are less capable of resisting them immediately after being cast; in other words, old castings are much stronger than new iron castings.

There is much other new and useful information in this work, for which we cannot find room to allude in this article, but will take occasion to do so in a future one.

New Patents.

The official list of Patent Claims, which we publish this week, is very long, covering nearly one page of our paper, and embracing more than sixty inventions. Over one-third of the whole number, twenty-one, were patented through the Scientific American Agency. The great success which attends our efforts in this direction, must be particularly gratifying to our clients.

Maine has Spoken.

Resolutions against the further extension of the Woodworth Planing Machine Patent have passed both branches of the Legislature of Maine, and received the Governor's signature. This is, indeed, good news.

We most earnestly hope that Congress will listen to the voice of reason and to the wishes of the people, as expressed through their petitions and popular assemblies, and not permit a devouring monopoly to be longer continued.

Ferry Steamboats to be put under a Safety Law.

It affords us much pleasure to be able to inform our readers that an amendment to the New Safety Steamboat Law, is now before Congress, including all passenger ferry steamboats, and tug boats, and some new provisions for the greater safety of all steamers.

American Institute Election.

The election for officers of the Institute takes place on the 8th of next month. Henry Meigs is nominated for Corresponding Secretary, W. B. Leonard for Recording Secretary, and E. I. Backhouse for Treasurer.

Recent American Patents.

Marble Saw—By J. E. Haviland, of Galveston, Texas.—This invention is for cutting two sides of a block of marble at once, on a taper or otherwise. The improvement consists in a peculiar connection between the saw gates or frames and the driving pitman, whereby the angle at which the saws cut, may be changed at pleasure without any alteration of the pitman.

Improvement in Stoves—By W. H. Binney, of Seneca Falls, N. Y.—In this stove there is an air pipe passing down through the center of the fire and communicating with an air chamber in the base. It is claimed that stoves of this description yield a much greater amount of heat, in proportion to the fuel consumed, than those in common use. The inventor also provides a damper for admitting air to the fire, above its surface, which unites with the escaping gases and causes their combustion. An additional economy is thus obtained.

Water Elevator for Cattle—By J. A. Ayres, of Hartford, Conn.—This is a farm-yard contrivance, of such a nature that by its use the cows or oxen whenever they wish to drink can raise their own water from the well. The invention consists of a movable platform so connected with a rope and wheel that the weight of the animal, in stepping upon the platform, causes the wheel to revolve and raise a bucket of water. The bucket is furnished with a faucet, which is opened in rising by striking a pin, and the water then runs into a trough. When the animal leaves the platform the faucet shuts, the bucket sinks into the well and fills again, ready for another customer.

Repeating Pistol—By Palmer Lancaster, of Burr Oak, Mich.—Most of the repeating firearms are furnished at the breech with a revolving barrel containing several powder chambers, which are successively discharged through the long barrel. In the present invention the revolving barrel is dispensed with and the straight breech piece containing the chambers is substituted; said straight piece slides transversely, or at right angles, to the line of the long barrel. The improvement consists in a novel method of moving the breech so as to bring its chambers, alternately, into line with the long barrel for discharge.

Improved Shoe Last—By A. J. Barnhart, Hartfield, N. Y.—Many lasts are composed of two pieces, the upper, or block, and the lower, or foot part. They are chiefly used in combination when the leather is to be stretched over them, and are fastened together by pins. The present improvement consists of a lock or catch for effecting the fastening, whereby greater convenience and firmness is obtained

Improved Harvester—By W. A. Kirby, of Buffalo, N. Y.—Consists, first, in having the driving wheel of the machine hung in such a way that it is allowed to swing, and thereby allow the wheel and also the finger bar and sickle to be raised or lowered by the inequalities of the surface of the ground, each acting independently. Second, in a peculiar raking attachment. Third, in the peculiar mode of attaching the fingers to the finger bars. It is a good improvement.

Improvement in Raking Attachments to Reapers—By Wm. H. Hovey, Springfield, Mass.—Consists in the employment of a reciprocating rake, and also a swinging rake applied to the platform, so arranged as to sweep off the grain with the utmost evenness, regularity, and certainty. It appears to be an excellent improvement.

Improvement in Power Looms—By Andrew Allen, of Wilmington, Del.—This improvement is applicable to the weaving of ginghams or other fabrics in which filling threads of different colors are employed. It relates to the mechanism by which the lifting and dropping of the shuttle boxes for the purpose of changing the shuttles so as to change the color of the filling. Drawings would be necessary to illustrate the operations of the parts.

Improvement in Grain and Grass Cutters—By Wm. H. Hovey, of Springfield, Mass.—Consists in covering the sickle bar with a shell or shield through which the cutting teeth only project, so as to prevent the sickle from being choked or clogged by straw, grass, or other obstructions. This is a good idea

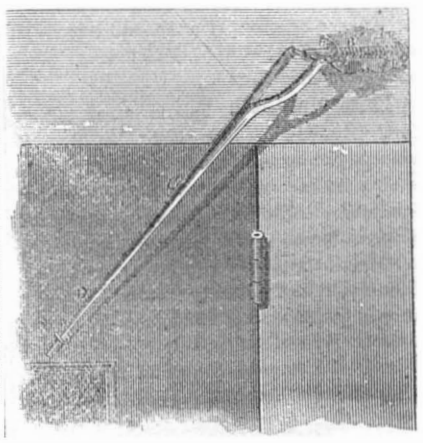
A peculiar device is also employed for raising and lowering the sickle so that it may pass over the obstructions, and likewise secured at varying hights from the surface of the ground as occasion requires.

Improvement in Calendar Clocks—By Edward Allen, of Glastenbury, Conn.—This invention relates to an improvement in the calendar mechanism which is the subject of letters patent issued to John Williams, dated Sept. 19th, 1854. The lever described in the specification of said Williams, through which the wheel of thirty-one teeth for showing the days of the month is caused to receive from the twenty-four hour wheel the overleaping movement necessary at the end of the short months, depends upon the force of gravity for its operation, and so will only operate in one position of the clock: on that account it is only applicable to upright clocks. This improvement consists in a new method of giving the necessary movement to the said lever, by which it is made capable of operating in all positions and is therefore applicable to marine clocks.

Furnace for Repairing Railroad Rails—By James McLellan, Detroit, Mich.—The upper part or tread of the rail is generally the first to give out. It laminates and breaks off into splinters, becoming so bad in time that a new rail must be substituted. Heretofore it has been impossible to repair the old rails by welding, owing to the fact that when placed in the fire the whole mass becomes equally heated, and, under the hammer, the thin neck part is crushed.

The present improvement consists in an improvement in the furnace so that only the tread part of the rail, where the welding is required, shall be heated. This is done by providing a hollow cast-iron holder, so formed as to receive the lower part of the rail and protect it from the fire, while the upper part of tread projects above the holder into the fire. The holder is filled with water so as to insure the cooling of the lower portion of the rail By the use of this improvement it is said that damaged rails may be very cheaply repaired. It appears to be a valuable invention.

Improved Door Spring.—By D. G. Smith, of Carbondale, Pa.—In this improvement the inventor makes a very ingenious application of the universal joint, and produces a door spring, at once cheap, simple, and good. The small frame piece, A, is screwed to the jamb, and holds the spring shaft, B, which connects with the forked lever, C; the extremity of the latter rests in a hook at D, on the door.



When the door opens, B, is partially turned and with it the spring. The spring in its reaction causes lever D to press upon and close the door. The operation is such that the lever presses with greatest force to shut the door when it is widest open, and again when it is nearly shut; so that the tendency of the spring is to keep the door always closed. Some springs relax when the door is nearly shut, leaving the acquired momentum to carry it the remainder of the distance; where such springs are used the door is apt to stand partly open, when at rest, especially if there are any currents of air about. Such is not the case with the above invention. This spring costs only a few cents for its manufacture, yet it is strong and apparently very durable.

To disconnect it from the door it is only necessary to lift the end of the lever, C, out of the hook, D, and allow it to hang down by the side of the door. Patented. Address the inventor for further information.

Floor Clamp for Carpenters—By H. M. Oliver, of Whitneyville, Conn.—Consists in the use of

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a sliding jaw and hook operated by a lever, in such a manner that while the implement is is firmly secured to the beam, the board to be nailed is pressed firmly against the adjoining board previously nailed, so as to form a close joint. It is a cheaply made, effective instrument.

Catch Lock for Ship's Settees—By B. F. McCreary, New York City—The object of this invention is to insure the locking of the back of the settee without the necessity of depending on servants; also to dispense with pins and spring catches, which are liable to be broken or deranged. The back of the settee, unless fastened, is likely to become broken, owing to its great weight, by being too frequently moved by passengers or by the rolling of the vessel. The present improvement is a self-acting catch lock of a strong and durable character.

Improvement in Wigs—By Dewitt C. Warner, Wilkesbarre, Pa.—This invention consists in attaching the hair to a ground-work of gutta percha, either in the form of a perfect scalp or frame-work, or in plates or strips of any desired form, for toupees, plaits, curls, &c. A crease is made in the gutta percha with a hot iron; the ends of the hair are laid in the crease and the iron again used to turn a furrow of the hot percha over on to the hair and thus cement it down. The advantage of this ground-work over the net-work commonly employed in wigs, &c., consists in the facility with which the hair can be attached, and the consequent reduction of the expense of labor; it may be put in singly or in locks. It also allows the hair to be combed and dressed with as much ease and perfection as if it were of natural growth. We are told that wigs made on this plan can be washed and cleansed thoroughly without injuring the beauty of their appearance or affecting their durability.

Improved Harness Creaser—By G. W. Pruyne, of Mexico, N. Y.—This invention relates to the creasing of leather used chiefly in harnesses, such as straps traces, etc. It consists in the employment of a pair of rollers, one of which is made of metal and the other of wood. The peripheries of the rollers have concave and convex surfaces, respectively, corresponding to the form intended to be given the leather.—The convex portions of one roller fit into the concave portions of the other. The leather straps are placed between the rollers which are then pressed together by a foot pedal. The straps while thus under pressure are drawn through the rollers and come out creased in the most perfect manner. This machine saves much time and labor.

Hot Air Engine—By John Ericsson, of New York City.—In this new patent the inventor causes a piston, working within a cylinder, to perform the successive combined operations of simultaneously discharging the heated air, and taking in the charge of cold air, compressing and transferring it to a regenerator and heater, or either, and thence to the opposite end of the cylinder, to act upon and impel the piston. So far as we can judge, this invention is no better, if it is as good as that which was tried in the steamer *Ericsson*.

Improvement in Furnaces—By A. McDonald Sprague, of Mobile, Ala.—The object of this invention is to permit the supplying of fuel to steam boiler and other furnaces, without opening their doors. When the doors are opened, in the common manner, a large quantity of cold air rushes in and checks the fire; a loss of fuel consequently ensues in restoring the temperature.

In this improvement the fuel is deposited in a metallic box, which is then shoved into, or rather over the fire, through an aperture in the furnace front. The box has a false bottom so arranged that by means of a rod it is opened, and the fuel dumped into the flames; the apparatus is then withdrawn.

Cloth Stretcher.—By J. J. Hilliard, of Fall River, Mass.—In the manufacture of woolen goods, the cloth is apt to shrink up during the dressing operation, and occasion difficulty in the work The present improvement is an attachment to the machine, whereby the cloth is kept evenly stretched, without being in any way injured or soiled by the lubricating grease.

Stump Extractor—By J. B. Creighton, of Tiffin, Ohio.—The stumps are removed by means of a screw and lever. The screw passes through the top of a gallows frame placed above the stump. The lower part of the frame is furnished with wheels to facilitate transportation. The apparatus is simple, strong, and very powerful.

Recent Foreign Inventions.

Smokeless Artificial Fuel—A. Morin, of St. Etienne, France, has obtained a patent for making a smokeless artificial fuel from that made with small coal or coke mixed with either tar or bitumen. He takes a common artificial fuel, which is made by mixing small coal or coke with tar or bitumen and molded into blocks, and subjects it to a high heat in a retort, so as to decompose the bituminous and tarry matter, and yet obtain from them a coke in the retort, which is the smokeless artificial fuel he claims to have produced.

Improvement in Steam Boilers—The London *Mechanics Magazine* deseribes an improvement in steam boilers, for which a patent has been secured by J. Lee Stevens. The inventor is patentee of a smokeless furnace which bears his name; and the recent patent is for an improved combination of the parts of a boiler by which air is to be more advantageously applied and combined with the products of combustion; the boiler is formed with a water space above the furnace, and above this space there is a return flue through which the products of combustion pass to a chamber called "the igniting box." From this chamber the tubular flue passes to a chamber flue at the opposite end of the boiler. In front of the "igniting chamber," there is a double cover pierced with holes through which streams of air pass, to mix with the products of combustion before they pass through the tubular flues. This arrangement is of no use for furnaces, in which anthracite coal is used, but may be useful in those using bituminous coal, in which much carbonic oxyd escapes as smoke.

Breech-Loading Rifles and Muskets—C. E Reeves, of London, has obtained a patent on the above named class of fire-arms. He employs a movable breech, which is made to fit into the end of the rifle barrel, and is held in close contact with it by the lateral pressure of a wedge piece, which is hinged to the barrel and the lock frame, and which drops between the end of the breech and a false breech. To charge the rifle, this wedge piece is first withdrawn, and the breech slidden back clear of the barrel into the space vacated by the wedge piece. A small finger lever at the side slides back the breech, which is then turned up and receives the charge; then it is brought down again into line with the barrel, slidden forward, and forced into position by the wedge piece described. The movable breech in this rifle, is a charge chamber, and appears to be a supplementary device to the Sharp's rifle.

Distilled Coffee—T. A. Poncelin, of Paris, has obtained a patent for distilling roasted coffee, to obtain a substance without residuum or grounds, and perfectly soluble in water. The liquid is stated to be pale limpid and volatile, and possessing a fine aroma.

Globotype Telegraph—The London *Artizan* contains an illustrated description of a new and peculiar telegraph bearing the above name, invented by David McCallum, of Stonehouse, Devon, Eng. The leading characteristic of this invention consists in releasing small glass balls of three different colors—white, black, and blue—in such a manner as to fall over a series of inclined planes, and drop into their proper places, where, by their color and the way they are made to arrange themselves, they form a message. These balls are thrown out one by one at the will of the operator, and as multiplied and intermixed they form the alphabet, like Prof. Morse's dots, spaces, and dashes. From the short description given of it we have not been able to perceive how an operator at one end of a line, can, with a single wire, separate and direct the three different colored balls, and make them arrange themselves into a message at the other end of the line, but the Artizan speaks favorably of its simplicity, practicability and capability of being worked with one wire. It is very far from being as simple as the Morse Telegraph or the Chemical Telegraph, and although it evinces ingenuity in construction, it certainly is not of a character to supersede any *recording* telegraph now in use.

Notes on Ancient and Curious Inventions.—No. 4.

Paper Making—In article No. 1, page 238, we stated that Mr. Wilkinson had manufactured paper in Pennsylvania in 1732.—The name should have been Thomas Wilcox. We have received a letter from Joseph Wilcox in which he states that the manufacture of paper is still carried on at Ivy Mills, Delaware Co., by the descendants of the original founder of paper manufacture. The establishment manufactures bank note paper, and with only one or two exceptions, is the only mill in the United States where hand-made paper is now made.

In the Patent Office Report for 1850 there is a letter from James M. Wilcox, of Ivy Mills, on this subject, in which are some useful hints. It is stated in it that the best qualities of writing paper contain from 30 to 50 per cent. of linen, and that cotton rags of themselves are too tender to make good strong paper. An excellent substitute for the linen of paper which we obtain in foreign rags is that of raw cotton, which makes a beautiful paper when mixed with worn-out cotton rags. When the price of cotton was as low as six cents per pound it is stated that large quantities of it were used in the manufacture of paper. E. Conkling, Esq., of Cincinnati, suggests the invention of machinery to remove the short cotton knap or fiber that is left upon cotton seed by the usual process of ginning, and the using of this fiber for making paper. The suggestion is an important one. While the cotton so obtained could be used for making paper, the clean cotton seed resulting therefrom would yield more oil by expression. The amount of short cotton fiber left on the cotton seed raised in the United States is equal to three times the amount of rags, by weight, used in paper making.

Machines for making paper were used in Europe previous to their introduction into our country. In 1830 the first successful Foudrinier machine was made at Windham, Conn., and since that time no paper machines have been imported from abroad. There are two kinds of paper making machines, the Foudrinier, or shaking endless wire-web machines, and the cylinder machines. The former makes the best, but the most expensive paper.

A very great improvement was made in paper making about 1830 to render it cheaper by discharging the color from rags by the use of chlorine, whereby common printed rags could be used for making white paper. Before that period white rags alone were used for writing paper. Every improvement which tends to make paper cheap is of vast benefit to mankind. It is believed by many that a cheap kind of cotton may be cultivated to be used raw in making paper. Beautiful paper can be made from hemp bagging and cable rope.—Hemp bagging is in great demand, for mixing with rag pulp to give strength to paper for newspaper printing. Machine-made paper costs about one-eighth that of hand-made paper for work—not taking into account the expense of the machinery. As good paper is now made in the United States as in any other country, and with the same quality of materials our paper manufacturers can produce paper equal to that of the best English or French. A great deal of wall paper is imported from France, but very little of any other kind. Much of our coarse wrapping paper is made from straw, and a finer quality is now extensively manufactured from the sea grasses which grow in great abundance along our shores in the salt marshes. The excitement which existed in the early part of last year, when rags were dear, respecting obtaining new materials, such as wood, shavings, &c., for white paper making, has resulted in the erection of a large and splendid mill at Little Falls, N. Y. The machinery is now almost completed, and the establishment is expected to be in full operation in a few weeks more. We have seen some very fine specimens of wrapping paper made from bass wood at this concern. The projectors are expecting, shortly, to turn out fine printing paper in large quantities made from the same wood.—The making of paper from wood is a very old art. The improvement claimed at Little Falls is in the mode of bleaching.

A great number of patents (85) have been taken out for improvements in the processes, machinery, and materials relating to paper making. Paper making from other substances than rags engaged the attention of many persons long ago. A patent was taken out in 1801 by Joseph Condit, Jr., of New Jersey, for making paper from currier's shavings. B. Allison and J. Hawkins, of New Jersey, obtained one for making paper of corn husks in 1802. S. Green, of Connecticut, obtained one for paper made from sea-weed in 1809. J. McThorndyke, of New York, made patent paper from pelts in 1817. E. Collier, of Massachusetts, took out one for making paper of sea grass in 1828. J. W. Cooper, of Pennsylvania, for making it of straw, in 1829, and L. Wooster and Joseph E. Holmes, of Pennsylvania, for making it of wood, in 1830. The patents for making paper from these different substances are now public property.

A Railway for Ships.

A correspondent—G. B. Onslow—suggests a "Ship Railway" across the Isthmus of Nicaragua, as a superior and more speedy means of transporting ships from ocean to ocean, than by a canal. "A ship car," he says, "may be supported on a number of trucks, and these may be placed, three abreast, on as many separate tracks of rails. The center track and trucks would require to be very strong and heavy. At the harbor, on each ocean, a floating dock can be made, into which the car for a ship may be made to descend, and again take up the ship. This railroad should be built level, and in the most substantial manner."

He has no doubt but a ship railroad can be built, by which steamers and ships may be transported overland with all their passengers and cargoes, from the Pacific to the Atlantic Oceans. We believe that such a railroad can be built, and that ships can be transported on it, in the manner described by him. The idea is a grand one,—but the great question is, would such a railroad pay? War ships were transported over land on rollers to batter down the walls of Constantinople, by a Turkish Sultan, more than three centuries ago, and certainly with our modern improvements in engineering, we can do so now on a railroad. If such a railroad would pay, it would be the means of greatly extending our commerce. A full description of this idea, with an illustration, may be found in No. 15, Vol. 1, Scientific American.

A Hollow Mountain.

The *North Californian* states that recently while eight men were crossing Table Mountain they observed that in many places the ground seemed hollow, and in one place, on striking upon the ground with a sledge, the echo was given back with such distinctness that led them to believe that there would be little difficulty in breaking through. Having procured proper implements, they set to work. After going the depth of four feet, one of the party who was using a crowbar was seen suddenly to fall, and upon examination a hole was found about four inches wide, through which the bar had slipped and sunk into the mountain. The aperture was immediately enlarged, but it was found that, owing to the brittleness of the rock, it was exceedingly dangerous working around it.

Gold Quartz Mining.

The Nevada *Journal* (Cal.) states that the prospects of gold quartz mining at present is excellent, and the yield from this source is about one-sixth of the product of the whole State. In 1851 there was a wild excitement regarding the immense profits that were expected to be made at once in crushing quartz and obtaining gold from this source, and vast sums of money were expended in erecting untried machinery. Much experience has been gained since, and a mill can now be put up for $8000 that will do more work than some of those which cost $100,000. Improvements have also been made in the amalgamating processes. New mills are being continually put up, and the product from gold quartz is constantly on the increase.

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TO CORRESPONDENTS.

L. B., of N. Y.—You can get a patent for the peculiar composition as a coating for the matches, but that is all From what you have stated it appears to be new, useful, and patentable. We cannot now give you the name of he party in Louisiana.

J. W., of Boston—Razor hones are generally made with three sides of buff leather and one side of a composition of glue and fine emery dust. Fine dust from the grindings of fine water whetstone, is generally used on one side of the one.

T. S., of Ind,—A patent could not be procured for making hats of paper. Pavements constructed of boulders and covered with pitch and gravel, or made entirely of pitch and gravel. are not new; the latter plan is commonly used in Paris and some other European cities. Roof constructed in the manner you describe is well known and several references could be given.

B. & M., of Havre—The sewing machine to which you refer is the invention of T. J. W. Robertson, of this city; it has already been patented in France and England, and Mr. R. is now in London preparing to bring it out. The owners of the patent here, Messrs. Jerome & Bro., are not engaged in their manufacture, owing to some embarrassment in their financial affairs. The machines cannot be obtained in this country. There is no prospect that th machine will be offered in the market at present.

J. S. W., of S. C.—The question of anchor ice was discussed somewhat at length in Vol. 7, Sci. Am., and no new light since then has been thrown upon the subject.

A. H., of N. Y.—The government has no exclusive natural right to the soil, it has only the right of possession. You confuse the question by comparing a title to a certain plat of land with that of a power to prevent persons using a machine of their own making. Comparisons to be good must be appropriate: you will perceive this by a little reflection.

H. A. R., of N. Y.—If your pump boxes are tight they ought to raise a cylinder full every stroke, but they must be hard to work at the end of eighteen feet rods. If you would use a single tube and a tight piston on a short rod the pump would work much easier.

T. A. M., of Va.—We are not acquainted with the Warren wheel, nor do we know where you can obtain the particular information desired relating to it. The inventor and manufacturers reside at Wareham, Mass. It is now the custom to deduct twenty-five per cent. of the nominal power of the water; we have no doubt but more wheels give less than those which give more than seventy-five per cent.

A. K. A., of N. Y.—We do not know anything about the common opinion as to the cause of the Niagara whirlpool. The objects drawn into it are no doubt also carried out of it into the Lake below. The attempt to navigate the Maid of the Mist down to Lake Ontaria would in all probability end her fate in a failure to pass the whirlpool.

J. C., of Mich.—You want to elevate water twenty feet high by a ram having a three feet fall. Theoretically it will take about seven times more water, but you must allow at least one-third more for friction. Every foot of pipe one inch in diameter contains 9·42 cubic inches of water. From this data you can calculate the amount of water in your pipe.

H. S. A., of N. Y.—When gutta percha is mixed with india rubber it is rendered very elastic. Gutta percha can be obtained in great quantities in this city, but we do not know its price in a purified state, like the sample you have sent.

J. W., of Pa.—The matter to which you refer will be found on another page.

H. F., of ——.—A book giving an account of the method of manufacturing soap, called Morfitt's Applied Chemistry, is published by H. C. Baird, Philadelphia. To make common soft soap, grease is boiled in a strong lye of wood ashes. After boiling about an hour throw a little salt into the kettle and cool. The windmill you refer to is as simple as any other; you should see it and judge for your self.

D. W. H., of ——.—Emery wheels are made by mixing powdered emery with one-fourth its weight of pulverized stourbridge loam, and a little water, then molding them by pressure in a mold, and allowing them to dry, and afterwards burning them in a close muffle at a temperature just a little below a white heat.

E. S., of Pa.—If the orifice is five feet from the shaft it will be exactly the square root of the fall, which is considered the best proportion. It is best to introduce the water under the arms in the Barker mill, but why in the name of common sense is such a mill used. It does not make any difference whether you taper the conducting pipe or not; you must taper the hollow arms. What do you mean by centrifugal force? We cannot tell you the amount of it from the simple number of revolutions of the wheel. The rules in books for calculating centrifugal force are untrustworthy

I. S., of C. W.—You can obtain a hand lathe for wood work of James Stewart, of this city.

G. M., of C. W.—We are obliged to you for Mr. B.'s essay on the plow. It is not likely that the fees for foreigners will be reduced this session of Congress. The plow is a good one; whatsoever is new is patentable. We do not publish works of the kind mentioned by you.

S. P. A., of Conn.—If you mean a treatise on Millwrighting, Scott's Millwright and Engineer's Assistant, by Blackie & Son, this city, is the only useful work of the kind in print. It is costly, being about $24. We are not acquainted with a better way of polishing plate than that described by you.

J. W., of Pa.—We have had the same kind of marine governor submitted to us at least twenty times. It is an old invention; a patent was refused for it some eight years ago.

C. C. T., of N. Y.—An article on enamelling iron in a recent number of our paper will afford you the information desired.

P. R., of N. Y.—Wrought-iron metal pipes, even if coated with zinc, will soon rust.

J. R. M., of Mo.—We suppose you refer to Mr. Boyden's water wheels; they are patented, and you should write to him, at Lowell, Mass., on the subject.

E. H., of Mass.—We have published several engravings of Fountain Pens in back numbers of our paper. You can examine them and choose for yourself. Shall publish a cut of a newly patented one in the course of three weeks. Cannot say which is the best.

J. G. H., of Ind.—Your "look out" apparatus for indicating the direction of fires in cities would be of no advantage. The present plan is far more serviceable than yours could be.

G. McC., of N. B.—Your bills will be taken. There is no simple device in common use for correcting the equation of time in clocks: such a device would be useful. The bill for revising our patent laws is still before Congress.

J. P., of Pa.—A good disinfecting agent for cesspools is copperas dissolved in water, and thrown into them.—Chloride of lime and chloride of zinc are also disinfectants. Pure gin is made by distilling barley, malt, and rye meal mashed together, and giving a flavor with juniper berries.

H. H., of Mass.—Spiral cutters, such as you propose, are very old. Feeding the board by passing it between a roller and a flat surface would interfere with Woodworth's patent. The points you name relative to your specification are unimportant.

J. H. C., of Ohio.—See Vol. IX, page 396, Sci. Am., for wood sawing machine. You can put up an endless apron to carry away the wood. See Vol. XI, page 62, for box or dovetailing machine. Address the inventors for prices, &c.

R. O., of N. Y.—Burning fluid is composed of alcohol and refined spirits of turpentine. Add about ten per cent of turpentine to the alcohol, cold, and agitate well.

H. L. S. of Mass.—Engravings of several different wind mills have been published in our paper during the pas. year. Examine and satisfy yourselfas to which is the best. All of them are good. We have no preference.

J. W. R., of Ohio—Address the agents of the Goodyear India Rubber Company, N. Y., for information as to elastics.

W. R. W., of Phila.—All that has been published in foreign journals regarding the carmine, we have published. The process does not appear to be an improvement. If the cochineal be first boiled in soft water, and then salts of tin and cream of tartar employed as the pre cipitating agent a much finer color will be produced.

Platt Merritt, Camden, C. W., wishes to purchase the most approved shingle sawing machine.

C. Wevrick, Carlisle, Pa., wishes to purchase a machine for sawing out fellies for all kinds of carriages.

J. Martin, Rock Island, Ill., is in want of a hand machine for making luciter matches.

Money received at the Scientific American Office on account of Patent Office business for the week ending Saturday, April 19, 1856:—

J. R., of Pa., $135; B. & D., of Mich., $25; S. N., of Tenn., $25; H. & A., of Ind., $27; M. & P., of Ky., $30; J. B., of Ill., $30; H. & C. P., of Tenn., $30; W. F. C., of N. Y., $30; D. A. B., of O.. $50; G. C. B., of N. Y., $25; M. F. G., of N. Y., $25; J. C., of N. Y., $30; C. S. C. C., of Mass., $27; T. J. P., of Ill., $25; G. P., of La., $30; J. N. B., of N. J., $30; H. L., of N. Y., $25; C. H. & L. C. P., of N. Y., $60; G. H. T., of Mass., $10; E. S., of Vt., $25; E. D. L., of Mass., $250: W. & C., of Miss., $12·50 W. H., of Wis., $30; J. McC., of Pa., $30; J. G. H., of N. J., $250: F. E., of Pa., $30; E. A. C., of N. Y., $20; F. & C., of O., $55; W. W. M., of Ill., $35; F. K., of N. Y., $25.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, April 19:—

T. J. P., of Ill.; S. N., of Tenn.; B. & D., of Mich.; J. R., of Pa., (3 cases); M. F. G., of N. Y.; H. L., of N. Y.; C. S. C. C., of Mass.; G. C. B., of N. Y.; K. D. & K., of Pa.; F. K., of N. Y.; J. G. H., of Ind.; J. M. C., of S, C.; W. W. M., of Ill.; E. S., of Vt.; E. E., of Ill.; J. S. S., Sen., of Ind.

Important Items.

To the Unfortunate—We are no longer able to supply the back numbers of the present volume previous to No. 27, except from 1 to 12. Such numbers as we have to furnish, are gratuitously supplied to such subscribers as failed to receive them; and we would take occasion to state, that any person failing to receive their paper regularly, will confer a favor by notifying us of the fact. Missing numbers should be ordered early, to insure their receipt, as an entire edition is often exhausted within ten days after the date of publication.

Models—We shall esteem it a great favor if inventos will always attach their names to such models as they send us. It will save us much trouble, and prevent the liability of their being mislaid.

Patent Claims—Persons desiring the claim of any invention which has been patented within fourteen years can obtain a copy by addressing a letter to this office stating the name of the patentee, and enclosing $1 as fees for copying.

Term of Advertising.

4 lines, for each insertion, $1
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12 " " " $3
16 " " $4

Advertisements exceeding 16 lines cannot be admitted, neither can engravings be inserted in the advertising columns at any price,

☞ All advertisements must be paid for before inserting.

NOTICE TO CONTRACTORS—Office of the Long Dock Company, Jersey City, April 15, 1856. Sealed Proposals will be received at this Office until the 5th day of May, prox., at 10 o'clock, A. M., for grading two miles of railroad, including a double track tunnel about 4000 feet long. The tunnel is located in Hudson City, about one mile from the Hudson river, and through a ridge of trap rock known as Bergen Hill. The whole work to be completed on or before the first day of November, 1857.—Specifications, plans, profiles, sections, &c., of this work maybe seen at this Office, or at the Office of the New York and Erie Railroad Company, Erie Place, West Street, City of New York. HOMER RAMSDELL, President L. D. Co. 33 3

FOR SALE VERY LOW—State, County, and Town rights in a rare invention for making money with small means. For particulars address AMSDEN & PHIN, Rochester, N. Y. 1*

PATENT IMPROVED GLOBE VALVES that can be made perfectly tight when new, and easily re-ground without being removed from the pipes; also Gauge Cocks with the same improvement; also plumber's brass work, steam and gas cocks, oil cups, &c. Rights for sale. McNAB, CARR & CO., 133 Mercer st., New York. 33 6*eow

TO CAR BUILDERS—For Sale. One new Upright Boring Mill for boring car wheels. Makers price $600, will be sold for $400 cash. Address GEO. S. LINCOLN & CO., Hartford, Conn. 33 4

IMPORTANT TO INVENTORS.

THE UNDERSIGNED having had Ten years' practical experience in soliciting PATENTS in this and foreign countries, beg to give notice that they continue to offer their services to all who may desire to secure Patents at home or abroad.

Over *three thousand* Letters Patent have been issued, whose papers were prepared at this Office, and on an average *fifteen*, or *one-third* of all the Patents issued each week, are on cases which are prepared at our Agency.

An able corps of Engineers, Examiners, Draughtsmen, and Specification writers are in constant employment, which renders us able to prepare applications on the shortest notice, while the experience of a long practice, and facilities which few others possess, we are able to give the most correct counsels to inventors in regard to the patentability of inventions placed before us for examination.

Private consultations respecting the patentability of inventions are held free of charge, with inventors, at our office, from 9 A. M., until 4 P. M. Parties residing at a distance are informed that it is generally unnecessary for them to incur the expense of attending in person, as all the steps necessary to secure a patent can be arranged by letter. A rough sketch and description of the improvement should be first forwarded, which we will examine and give an opinion as to patentability, without charge. Models and fees can be sent with safety from any part of the country by express. In this respect New York is more accessible than any other city in our country.

Circulars of information will be sent free of postage to any one wishing to learn the preliminary steps towards making an application.

In addition to the advantages which the long experience and great success of our firm in obtaining patents present to inventors, they are informed that all inventions patented through our establishment, are noticed, *at the proper time*, in the Scientific American. This paper is read by not less than 100,000 persons every week, and enjoys a very wide spread and substantial influence.

Most of the patents obtained by Americans in foreign countries are secured through us; while it is well known that a very large proportion of all the patents applied for in the U. S., go through our agency.

MUNN & CO.
American and Foreign Patent Attornies, 128 Fulton street, New York; 32 Essex Strand, London; 29 Boulevard St. Martin, Paris; No. 3 Rue Theresienne, Brussels.

PAGES PATENT PERPETUAL LIME KILN, will burn 100 bbls. lime with three cords of wood, every 24 hours, likewise my coal kiln will burn 150 bushel with 1 tun bituminous coal in the same time; coal is not mixed with limestone. Rights for sale.
32 4 C. D. PAGE, Rochester, N.Y.

LOCOMOTIVE WOOD—Winter's American Wood Sawyer is particularly adapted for cutting wood for locomotive wood; is capable of cutting 75 to 100 cords in a day. Patented 1854. State and road rights for sale; for particulars address WM. WINTER, Rondout, N. Y.
32 4*

SMUT MACHINES—A. NEWBURY & CO., of Windham Center, N. Y., are manufacturing a superior article; having been thoroughly tested for a number of years, they are found inferior to none in cheapness, durability, and in the quality of their work. Price $50.
32 4*

CAUTION—The public are hereby cautioned against purchasing any right for improvement in Horse Shoes. Patented 25th of July, 1854 by W. H. Towers, from Geo. S. Earle or E. B. Strong, as the power of attorney under which such sales may be attempted to be made was revoked some months since. W. H. TOWERS,
32 4*

WM. BURDON'S STEAM ENGINE WORKS, 102 Front street, Brooklyn, N. Y.—Engines from 3 to 40 horse power constantly kept on hand, of the latest styles and patterns, with all the modern improvements. Engines from 40 to 200 horse power made to order, high pressure or with condensers. Also portable engines with boilers, and engines attached with wheels for pile-driving and wood-sawing, circular saw mills, upright engines that take up a very small space for printers' and pumping engines, steam pumps of various sizes, rotary pumps and mining pumps; also quartz mills and stampers for copper and gold; improved hoisting machinery for mines or stone quarries: also sugar machinery, sugar mills, sugar kettles and vacuum pans, saw mills, grist mills, marble mills, rice mills, screw and hydraulic presses, boilers, and castings of every description. The reputation that Wm. Burdon has sustained for the last 20 years, as an engine builder, is a guarantee for his work. Miners and manufacturers will find it to their advantage to patronize his establishment, as not less than one hundred finished engines are kept on hand. With the large lot of boilers, shafting, pulleys and hangers kept on hand, orders can be shipped the same day they are received. Also a large number of second hand engines of various sizes for sale. Second hand engines bought or exchanged for new ones or sold on commission. The great facilities and perfect system and order carried on in this establishment, enables Mr. Burdon to sell lower than any other establishment in the country for the same material and labor. Advice given gratis, drawings and plans made at the shortest notice. 30 4*

WOODWORTH PATENT Planing, Tonguing and Grooving Machines—The subscriber is constantly manufacturing and has now for sale the best assortment of these unrivalled machines to be found in the United States. Prices from $85 to $1450. Rights for sale in all the unoccupied towns in New York and Northern Pennsylvania. JOHN GIBSON, Albany Planing Mill, Albany, N. Y. 30 12*

1856. WOODWORTH'S PATENT Planing, Tongueing and Grooving Machines.—The subscriber is constantly manufacturing, and has now for sale the best assortment of these unrivalled machines to be found in the United States. Prices from $85 to $1450. Rights for sale in all the unoccupied Towns in New York and Northern Pennsylvania, JOHN GIBSON, Planing Mills, Albany, N. Y. 30 3m*

JAMES HARRISON, Jr.'s MANUFACTORY—Second Avenue, corner of 22nd st., New York. 31 4*

HARRISON'S 30 INCH GRAIN MILLS—Latest Patent.— A supply constantly on hand. Price $200. Address New Haven Manufacturing Co., New Haven, Conn. 31tf

STUB'S AND OTHER Superior Manufacture, Lancashire and Sheffield Files, Dixon's Black Lead Crucibles, Brass and Iron Machine, and Cap Screws, Pattern Letters, from 3-16 to 2 inches, adapted to all descriptions of Casting. Stub's Plyers and Nippers; small Bench Vises; Emery Cloth and Emery Paper; materials for Locksmiths and Bell Hangers; Brass and Iron Gimlet Pointed Screws of all sizes, &c. &c. &c. MANY, BALDWIN & MANY, Importers and Dealers in Building Hardware, &c., 49 John st., cor. Dutch, N. Y. 31 4*

THE NEW YORK DAILY SUN—Is forwarded by the early mails to country subscribers at $4 per annum, or $1 per quarter, payable in advance. The postage under the present law is as follows: to any post office in the State of New York, 78 cents per year, payable quarterly in advance. Out of New York State, but within the United States, $1,56 per year, payable quarterly in advance. MOSES S. BEACH, Publisher,
4 Corner of Fulton and Nassau sts.

PORTABLE STEAM ENGINES.—S. C. HILLS, No. 12 Platt st., N. Y., offers for sale these Engines, with Boilers, Pumps, Heaters, etc., all complete, and very compact, from 2 to 10 horse power, suitable for printers, carpenters, farmers, planters, &c. A 2 1-2 horse can be seen in store, it occupies a space 5 by 3 feet, weighs 500 lbs., price $240; other sizes in proportion. 27 e3w

75 CENTS A-YEAR—Or 16 months for $1. THE NEW YORK WEEKLY SUN is now sent to subscribers at the following very low rates, payable in advance:—One copy, 3 months, 25 cts.; 6 months, 50 cts.; 1 year, 75 cts.; 16 months, $1; 3 copies, 1 year, $2; 8 copies, $5; 13 copies, $8; 25 copies $15—with engravings.—The postage within the State is only 13 cents a year—out of the State 26 cents a-year. No traveling agents are employed. Specimen copies sent gratis. All letters should be post paid and directed to MOSES S. BEACH,
4 Sun Office, N. Y.

CIRCULAR SAWS—We respectfully call the attention of manufacturers of lumber to the great improvements recently introduced in the manufacture of our Circular Saws. Being sole proprietors of Southwell's patent for grinding saws, we are enabled to grind circular saws from six inches to six feet with the greatest accuracy and precision. The impossibility of grinding a saw without leaving it uneven in thickness has always been acknowledged by practical saw makers. This causes the saw to expand as soon as it becomes slightly heated in working. When this takes place the saw loses its stiffness, and will not cut in a direct line. We will warrant our saws to be free from these defects; they are made perfectly even in thickness, or gradually increase in thickness from the edge to the center, as may be desired. As there are no thick or thin places, the friction on the surface of the saw is uniform, consequently it will remain stiff and true, and will require less set and less power. Will saw smooth, save lumber, and will not be liable to become untrue. This is the oldest establishment now in existence for the manufacture of circular saws in the United States, having been established in the year 1830. Orders received at our Warehouse, No. 48 Congress st., Boston.
12 6m* WELCH & GRIFFITHS.

SCHENCK MACHINERY DEPOT—163 Greenwich street, New York, keeps always on hand Lathes, Planers, Drills, Steam Engines, Woodworth's Patent Planing Machines, Belting, &c., in great Variety. Tools furnished of any size, to order, and of the best quality.
25 16* A. L. ACKERMAN, Proprietor.

VAIL'S CELEBRATED PORTABLE STEAM Engines and Saw Mills, Bogardus' Horsepowers, Smut Machines, Saw and Grist Mill irons and Gearing, Saw Gummers, Ratchet Drills, &c. Orders for light and heavy forging and castings executed with dispatch.
LOGAN & LIDGERWOOD,
13 1y* 9 Gold st., N. Y.

BOILERS FOR SALE—Three Cylinder Boilers, 44 inches diameter, 30 feet long, with two 13-inch flues each, with steam drums 30 inches diameter and 5 feet high; and Cross Boiler 36 inches diameter, and 12 feet long; safety and check valves all in complete working order. Also, a new set of Van Sickle's Patent Salamander Grate Bars for a Furnace, 5 feet by 10. Apply to
HECKER & BROTHER,
32 4* 267 Cherry st., New York.

VERTICAL STEAM ENGINE and Boiler for Sale at a bargain. The Engine is nearly new, and well finished. The cylinder is 9 inches; the fly wheel is a band wheel 5 feet in diameter, face 14 inches, turned off, weight 1350 lbs. The boiler is 20 feet long, 42 inches in diameter, 1 flue 17 inches, well braced wrought-iron heads; it is very strong, and has been in use about six months; is about 15-horse power. Cost $1200, will be sold for $675 cash; delivered on ship board. Apply to MUNN & CO., at this office.

MACHINISTS' TOOLS.—Meriden Machine Co have on hand at their New York Office, 15 Gold street, a great variety of Machinists' Tools, Hand and Power Punching Presses, Forcing Pumps, Machine Belting, &c., all of the best quality. Factory West Meriden, Conn. 32 13*

CARPENTER'S ROTARY PUMP—For Pumping Hot or Cold Water, Lard Oil, &c. is (see good notice on both sides, in this paper, No. 29,) manufactured and for sale by D. C. HENDERSON, Sandusky, Ohio.
31 5*

THE AMERICAN PLATE GLASS CO. Having erected extensive works in East Brooklyn, (foot of North Sixth st.) are now prepared to execute promptly all orders forwarded to them, for Rough Plate Glass, for Sky Lights, Floor Lights, Pavements, Deck Lights for vessels, &c. Also an entirely new article possessing the properties and beauties of Agate, called Chalcedon. This material supersedes Marble, in its superior quality and utility for the purpose of Flooring, Mantel Pieces, Table Tops, and Ornamental Architecture. All orders left at the Office of the Company will receive prompt attention. Office 420 Broadway. Rough Plate Glass in the Sheet at the factory, 1-4 in. 35c.; 3-8 in. 35c.; 1-2 in. 40c.; 5-8 in. 60c.; 3-4 in. 75c.; 7-8 in. 80.; 1 in. 85c.; 1 1-4 in. $1·25. Terms cash in 30 days. 27 13

BOILER INCRUSTATIONS—No scale will form in the boiler when Weissenborn's Patent Incrustation Preventor is used. At the same time the apparatus is the best Heater that can be obtained. Apply to E. W. SARGENT, Delmonico's Hotel, New York City. 25 12*

FILMER & CO., Electrotypers, and Manufacturers of Electrotype Materials, 128 Fulton st., N. Y. Molding Presses, Batteries, Cases, Backing Pans, Shaving Machines, Metal Kettles, Planes, Blocks, Building Irons, etc., etc., on hand, or furnished at short notice, and at moderate charges. Adams' Improved batteries and black-lead machines also for sale. 23 tf

LINEN MACHINERY—JOHN R. McNALLY Champlain, N. Y. Agent for the sale of linen machinery of every description, new and second hand. Engineers and machinists tools, and linen yarns of every number and quality. 22 13*

PATENT ALARM WHISTLE—For Speaking Pipes. The right of a limited number of the Southern States, of this valuable patent, for sale on reasonable terms. Apply to W. OSTRANDER, No. 57 Ann street, N. Y. 29 13

STEAM PUMPS AND FIRE ENGINES—Steam Pumping Engines for wrecking purposes, Irrigating and Draining Lands, Deep Mining Shafts, Quaries, and Excavations, Railroad Stations, Factories, Public Institutions, Hotels, Gas Works, Steamers, &c. Also a large and improved class of Pumping Engines for supplying Cities, Towns, and Villages. Apply to H. R. WORTHINGTON, 28 Broadway, New York City. 25 13*

OIL! OIL! OIL!—For railroads, steamers, and for machinery and burning—Pease's Improved Machinery and Burning Oil will save fifty per cent., and will not gum. This oil possesses qualities vitally essential for lubricating and burning, and found in no other oil. It is offered to the public upon the most reliable, thorough, and practical test. Our most skillful engineers and machinists pronounce it superior and cheaper than any other, and the only oil that is in all cases reliable and will not gum. The Scientific American, after several tests, pronounced it "superior to any other they have ever used for machinery." For sale only by the inventor and manufacturer.
F. S. PEASE, 61 Main st., Buffalo, N. Y.
N. B,—Reliable orders filled for any part of the United States and Europe. 33 tf

NORCROSS ROTARY PLANING MACHINE.—The Supreme Court of the U. S., at the Term of 1853 and 1854, having decided that the patent granted to Nicholas G. Norcross, of date Feb, 12, 1850, for a Rotary Planing Machine for Planing Boards and Planks is not an infringement of the Woodworth Patent.
Rights to use the N. G. Norcross's patented machine can be purchased on application to N. G. NORCROSS,
208 Broadway, New York.
Office for sale of rights at 208 Broadway, New York Boston, 27 State street, and Lowell, Mass, 19 6m*

GRAIN MILLS—EDWARD HARRISON, of New Haven, Conn., has on hand for sale, and is constantly manufacturing to order, a great variety of his approved Flour and Grain Mills, including Bolting Machinery, Elevators, complete with Mills ready for use. Orders addressed as above to the patentee, who is the exclusive manufacturer, will be supplied with the latest improvements. Cut sent to applications, and all mills warranted to give satisfaction. 29tf

NEW HAVEN MFG. CO.—Machinists' Tools, Iron Planers, Engine and Hand Lathes, Drills, Bolt Cutters, Gear Cutters, Chucks, &c., on hand and finishing. These Tools are of superior quality, and are for sale low for cash or approved paper. For cuts giving full description and prices, address, "New Haven Manufacturing Co New Haven, Conn. 19 tf

AGENCY FOR THE PURCHASE AND SALE of valuable patents and inventions, T. H. LEAVITT, No. 1 Phœnix Buildings, Boston. None but matters of real merit and utility will receive any attention. Circulars containing further information may be had on application. 29 12*

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Science and Art.

Composition and Formation of Steel.

Before a recent meeting of the Boston Natural Historical Society, Dr. Jackson gave an account of some researches into the composition and manner of formation of different kinds of steel. As commonly known, steel is a combination of carbon and iron, made by heating flat bars of pure iron in combination with charcoal. The carbon is first converted into oxyd of carbon, and then unites with the iron as carburet. The result of this process is known as blistered steel, from the bubbles generated by gases upon its surface. Shear steel consists of parallel plates of pure iron and steel welded by folding, and uniting the bars of blistered steel. Cast steel is fused in pots of the most refractory material, and differs from cast iron, which likewise contains carbon, in this respect, that cast iron is a mixture of coarse aggregated matters, graphite and iron, whilst cast steel is a chemical combination of carbon and iron.

From the researches of Berthier it is known that manganese will form an alloy with iron. When iron is mingled with a considerable proportion of manganese, a brittle compound results; but when combined with a very small proportion of manganese, a steel of very fine quality is obtained, which has this advantage over carbon steel; carbon steel becomes coarse when tempered in thick masses, from segregation of the particles of carbon; but no such trouble arises with manganesian steel. Parties in England have lately introduced excellent wire for pianoforte strings, made of this kind of steel, as well as for cutting instruments and other purposes. In the wire, Dr. Jackson has found one and a half per cent. of manganese, and has established the fact that it resists, to a very remarkable degree, the action of hydrochloric acid. Sixteen years since Franklinite Iron was manufactured by Mr. Osborn into very hard and fine steel. This steel required tempering at a lower heat than carbon steel. Many of our manganesian irons might be manufactured into steel by the simple process of fusion, and a steel of uniform character might be made without previous cementation with carbon.

Machine for Boring and Mortising.

Our engraving illustrates an invention by Mr. Henry Allen, of Norwich, Conn., for boring and mortising timber and wood of all kinds. The principal features of novelty consist in a peculiar formation of the cutting tool, and in certain means of adjusting the movement of the cutter, bed, &c.

The stuff to be mortised, A, is laid on the traveling bed, B, upon which it is secured by the screw clamp, C, and hinged clamps, D D'. The bed is moved by means of crank E, which connects with a rack and pinion on the under side.

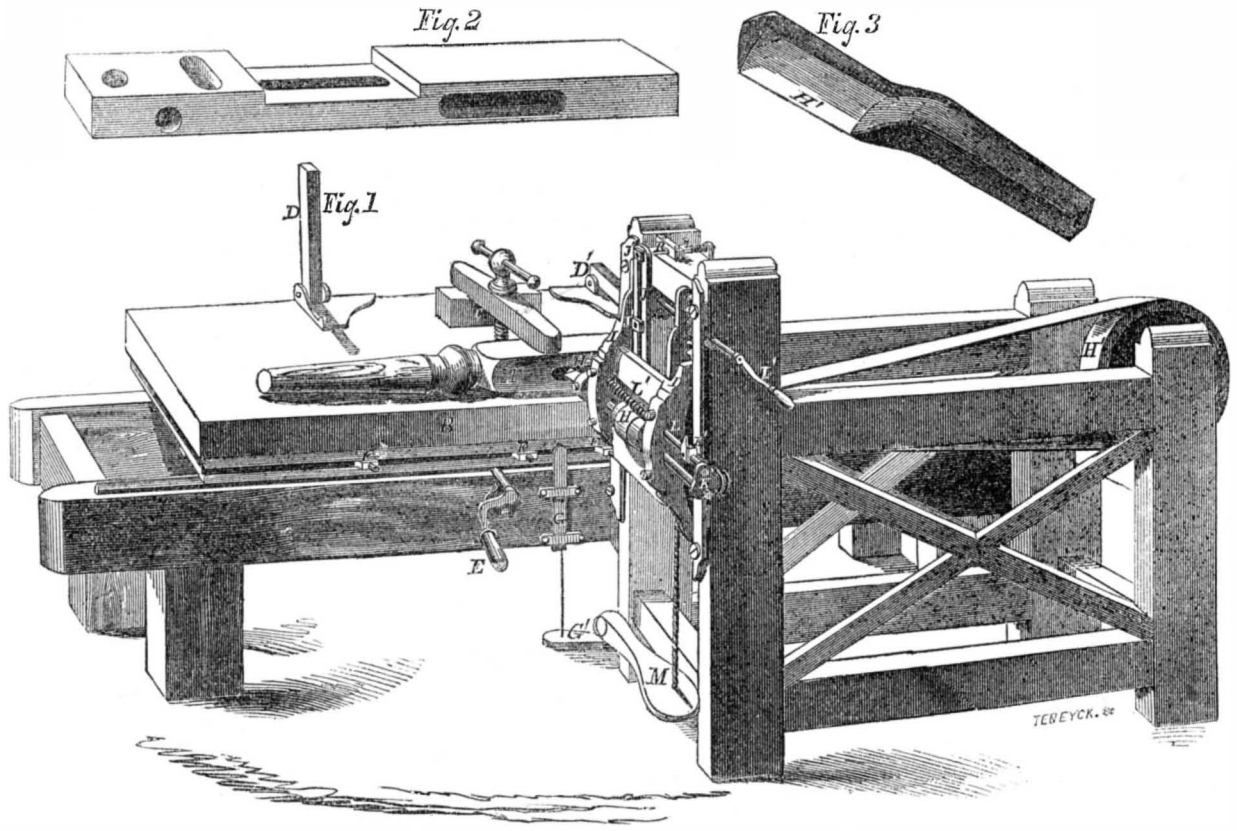
The horizontal length of the mortises is regulated by studs, F F, on the lower edge of bed; these studs are adjustable, so that they may be set nearer or further apart, according to the dimensions of the mortise which is desired to be cut. Between the studs there is a spring bolt, G, which prevents the bed from moving beyond the space indicated by the set of the studs, F; spring bolt, G, may be thrown below the studs by the foot pedal, G', when it is desired to move the bed to a new point. H' is the cutter, put in motion by a belt from pulley H. The cutter, H', is supported in a sliding frame, I, which is moved up and down by means of rack and pinion operated by crank I'. J is a slotted strap, in which are two adjustable stops, J'. The end of spring bolt, R, enters the slot between the stops, and the sliding frame can therefore only move as far as the stops permit; by varying the distance of the stops the vertical dimensions of the mortise may be changed. The cutter, H', also has a lateral sliding movement, by which the depth of the mortise may be regulated; the outer end of the cutter shaft connects, by means of the head block, K, with the spring rod, L; a cord extends from K to foot pedal M; the cutter is made to enter the wood by the pressure of the foot upon M; the spring, L', throws the cutter back out of the stuff when the pressure on M is released. The depth to which the cutter enters the wood is regulated by adjusting the stud, K'.

The cutter, H', seen enlarged in fig. 2, is of the peculiar form shown, and is so made that it cuts equally well either as a borer or mortising tool. It is made to revolve with a speed of about 400 revolutions per minute.

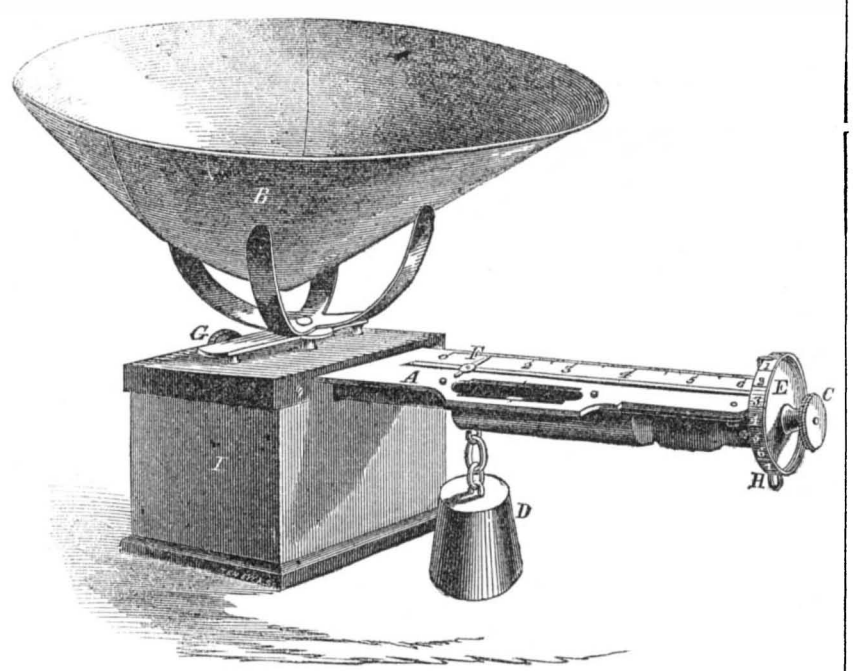
The method of adjusting the movement of the cutter and stuff, thus altering the dimensions of the mortise at pleasure, is very convenient and accurate. It also permits the boring and mortising of any number of pieces of stuff, such as bed posts, car frames, &c., all exactly alike, without new adjustment for each. The cutter makes clean and finished work. Any desired number of studs, F, may be introduced on the bed, B, and the number of slots to be mortised in the stuff increased accordingly. Fig. 2 shows a piece of wood with several different forms of mortises capable of being done by cutter H'.

This machine is quite simple in its construction, and durable. We have seen testimonials from prominent car-builders and railroad companies, who have the invention in use; they all speak in the highest terms of its practical success and excellence. The machines cost from $320 upwards, according to size. Address the inventor for further information. Patented April 11th, 1854.

IMPROVED BORING AND MORTISING MACHINE.



WEIGHING SCALES.



Improvement in Scales for Weighing.

In the invention illustrated by the accompanying engraving the weighing lever, A, is balanced much in the usual manner; the pan, B, in which the article to be weighed is placed rests upon one end of the lever, the weights, and graduated scale, being on the opposite end. The improvement consists in making the weighing lever, A, hollow, and providing its interior with a screw rod, which, on being turned by the thumb screw, C, moves a nut to which the weight, D, is attached below, and the index pointer, F, above. The pointer, F, shows the number of pounds, and the small figured wheel, E, exhibits the ounces and fractions. At the opposite end of the lever is another thumb screw, G, by which the scales are balanced to allow for tare. If it is wanted to increase the weighing power of the lever, an extra weight may be hung at the eye, H. I is a box or standard which supports the apparatus.

It must be obvious that the method of moving the weights by thumb screw is exceedingly accurate, and, at the same time, very convenient. For drug and shop uses, and indeed for all weighing purposes, the invention is well adapted. It is neat in appearance, compact, quickly adjusted, simple, durable, &c. It is one of the best improvements of its class with which we are acquainted. Mr. James Kelly, of Sag Harbor, N. Y., is the inventor and Mr. John Sherry, of the same place, owner and assignee of the patent. Address Mr. Sherry for further information. Patented March 4th, 1856.

Conductor and Engineer Indicted.

The Jonesville, Mich., *Independent* learns that the grand jury indicted Parsons, the conductor, and Keegan, the engineer, for manslaughter, in causing the loss of several lives by the collision between that place and Hillsdale; on the 7th of February last. They started the train from Jonesville out of time.

Swallows.

As a proof of the valuable services rendered by swallows, it is estimated that one of these birds will destroy at a low calculation, 900 insects per day; and, when it is considered that some insects produce as many as nine generations in a summer, the state of the air but for these birds may be readily conceived.

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